# CCD-V8AF-E/V7AF-E

# SERVICE MANUAL

*AEP Model*
*UK Model*
*West Germany Model*

Video 8 AF
8 AF
SONY

This photograph is CCD-V8AF-E

**AF**
Auto Focus
**Video 8**

## SPECIFICATIONS

This manual contains the SUPPLEMENT-1–2.

**System**

| | |
|---|---|
| Video recording system | Rotary two heads,<br>Helical scanning FM system |
| Audio recording system | Rotary head, FM system |
| Video signal | PAL colour, CCIR standards |
| Usable cassette | 8mm video format cassette |
| Tape speed | SP: Approx. 20.051 mm/sec.<br>LP: Approx. 10.058 mm/sec. |
| Recording or playback time | SP: 90 min. (P5–90)<br>LP: 180 min. (P5–90) |
| Fast forward time | Approx. 3 min. |
| Image device | CCD (Charge Coupled Device) |
| Viewfinder | Electric viewfinder<br>VF-206/208 (1" black and white) |
| Lens | Combined 6 × power zoom lens<br>f = 12–72 mm, F1.4<br>Filter diameter: 52 mm |
| Auto focus system | Infrared auto-focus |
| Colour temperature | Preset values: ☼ 5,800°K<br>💡 3,200°K<br>Auto: From the light at a tungsten lamp to the light on a slightly overcast day. |
| Minimum illumination | 22 lux (F1.4)<br>(2 footcandles) |
| Illumination range | 22 lux–100,000 lux<br>(2–9,294 footcandles) |
| Recommended illumination | More than 300 lux<br>(28 footcandles) |
| Aperture correction | Approx. ±1.5 |

**Input and output connector**

| | |
|---|---|
| MULTI CONNECTOR 24-pin | Video input: 1 Vp-p, 75 ohms unbalanced, sync negative<br>Video output: 1 Vp-p, 75 ohms unbalanced, sync negative<br>Audio input: –6 dBs, input impedance more than 47 kilohms<br>Audio output: –6 dBs, output impedance less than 1 kilohms |
| Earpiece jack | Minijack, 8-ohm impedance |
| Remote jack | 5-pin connector |
| MIC jack | Minijack, –60 dBs, low impedance |

**General**

| | |
|---|---|
| Power requirements | MULTI connector 8.5 V<br>Battery holder 6 V/8.5 V |
| Power consumption | 7.7W (camera recording) including the viewfinder |
| Installation | Horizontally, vertically |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | –20°C to +60°C (–4°F to +140°F) |
| Dimensions | Approx. 126 × 191 × 350 mm (w/h/d)<br>($5 \times 7\frac{5}{8} \times 13\frac{7}{8}$ in.) |

– Continued on next page –

MICROFILM

## 8 VIDEO CAMERA RECORDER

SONY®

| | |
|---|---|
| Weight | Approx. 2.3 kg (5 lb 1 oz) excluding the battery and cassette<br>Approx. 2.63 kg (5 lb 13 oz) including the battery and cassette |
| Microphone | Electret condenser microphone, uni-directional monaural type |

**Accessories supplied**

Shoulder strap (1)
Camera head cover (1)
Sticker (1)

**Optional accessories**

Tuner timer unit TT-V8EC/V8UB, AC power adaptor AC-V8E/V8UB, Battery pack NP-22, DC pack DCP-85, Car battery cord DCC-16AE, External microphone shoe SAD-100, Remote Commander RM-84, Cable attachment VMC-540, Cable VMC-262M (2 phono plugs to 6-pin connector), VMC-2104M (2 phono plugs to 21-pin connector), VMC-2106S (3 phono plugs to 21-pin connector), VMC-600M/601M (2 phono plugs to 2 phono plugs), VMC-602MS/603MS (2 phono plugs to 3 phono plugs)

# SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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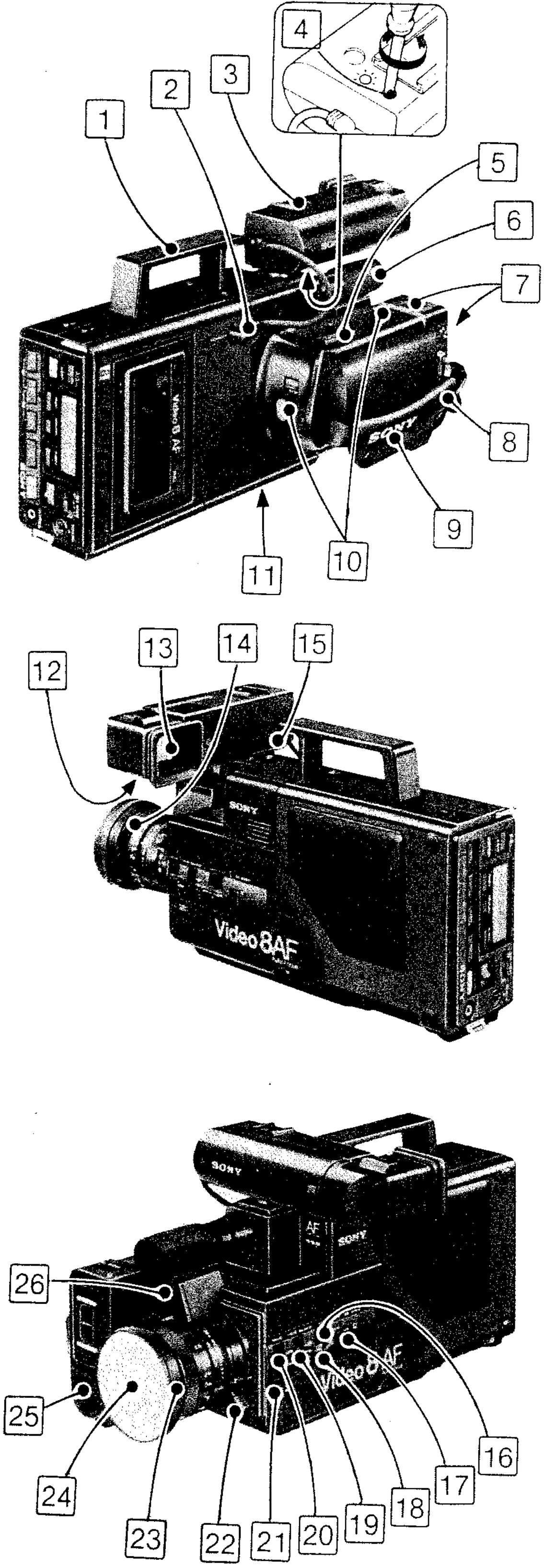
- CCD-V7AF-E SERVICE MANUAL

# SECTION 1
# GENERAL

A



## 1-1. LOCATION AND FUNCTION OF PARTS AND CONTROLS

A

For details on the use of each control, refer to the pages indicated in the brackets.

1 **Handle**

2 **VIEWFINDER jack**
Connect the plug of the viewfinder cable.

3 **Accessory shoe**
Attach an optional external microphone or video light (up to 500 g, 1 lb).

4 ☼ **(brightness) control screw** (blue screw on the bottom of the viewfinder)
Turn with a Philips screwdriver to adjust the brightness of the viewfinder screen, if necessary.

5 **Power zoom button [p.18]**
Press for smooth power zooming between wide-angle (W) and telephoto (T) positions.

6 **Microphone**
Sound is recorded simultaneously while shooting.

7 **BATTERY compartment and battery ejector**
Insert an NP-22 battery pack, ACP-85E/85UB (or for the models outside Europe) ACP-88 ac pack or DCP-85 dc pack with the metal terminals facing the unit.
To remove the battery pack, ac pack or dc pack, push the bottom of the pack and at the same time slide the ejector in the direction of the arrow. The pack will then slide out.

8 **Lens cap hook**
Snap the lens cap here when it is not in use.

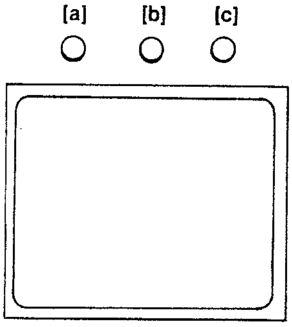
9 **Grip strap [p.12]**
Adjust this so that your fingertips can easily manipulate the START/STOP button.

10 **START/STOP button [p.10, p.14]**
Press to start or stop camera recording.

11 **Tripod receptacle**
Attach an optional tripod.

12 **Viewfinder lens adjustment lever [p.13]**
Adjust to your eyesight to assure good focus. Be sure to adjust when shooting for the first time or after another person has used the camera.

13 **Electric viewfinder**
The lamps inside the viewfinder light or blink during camera recording.



- [a] **Low light lamp (yellow):** Lights when the light is insufficient.
- [b] **Tape run/battery lamp (red):** Functions when the camera section is turned on. Lights steadily during recording.
  Blinks when the inserted battery is exhausted, when the tape comes to an end, or when the tab on the inserted cassette is set to prevent erasure of a recording.
- [c] **White balance lamp (orange):** Functions when the low light lamp is not lit. Lights steadily when the WHITE BALANCE switch is set to ☼ or 💡.
  Blinks when the white balance is not adjusted. Goes out when the WHITE BALANCE switch is set to ▪┐, and the white balance has been adjusted.

14 **Focus ring [p.17]**
When manually focusing by setting the FOCUS switch to "MAN", turn the ring to focus while looking through the viewfinder.

15 **Viewfinder slide button [p.12]**
When you use your left eye, press this button and pull the viewfinder in the direction of the arrow until it locks. You can also remove the viewfinder.

16 **CAMERA POWER switch and lamp [p. 9]**
Slide to the right to turn on the camera section. The lamp lights up.
To turn off the camera section, slide again and the lamp goes off.
When a TT-V8EC/V8UB tuner timer unit is connected, this switch does not function.

17 ↶ **REC REVIEW button [p.15]**
Press when the unit is set in the CAMERA mode or VTR-CAMERA mode, and then is set in the pause mode during recording, to review the last few seconds of the recorded picture.

18 **Aperture switch [p.18]**
The amount of light entering the camera is determined by this switch.

■ (centre): Normally set to this position.
BACK LIGHT: Set to this position when the subject is back lit.
HIGH LIGHT: Set to this position when the subject is too brightly lit against the background.

19 **WHITE BALANCE switch**
To adjust white balance, slide the switch all the way down and return it to the automatic position (▪┐), or set it to the proper position according to the prevailing light conditions.

☼ : Sunlight (outdoors)
💡 : Artificial light (indoors)
▪┐ : Automatically adjusted

20 **FOCUS switch [p.14, p.17]**
Set to AUTO for the automatic focusing function of this camera recorder to activate. Set to MAN (manual), when you desire to focus manually.

21 **PUSH AUTO button [p.17]**
Even while the FOCUS switch is set to "MAN" for manual focusing, you can activate the automatic focusing function by keeping this button depressed.

22 **Manual zoom lever [p.18]**
Turn the zoom lever for manual zooming between the wide-angle and telephoto positions.

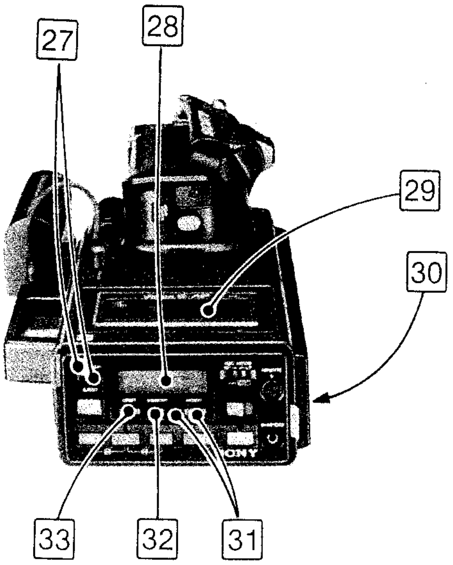
23 **Lens hood**
Usually attached to the lens ring. Remove when attaching other optional lenses.

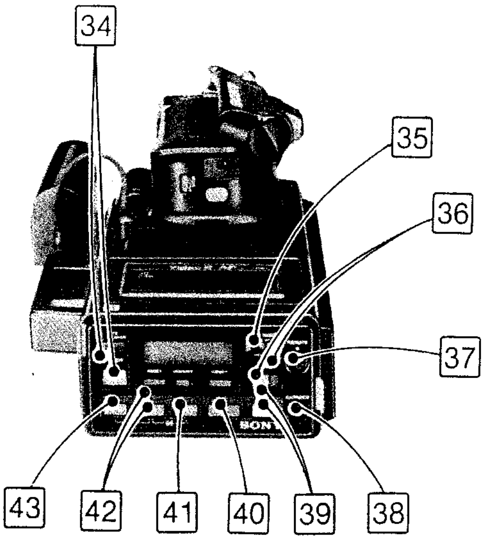
24 **White lens cap [p.13]**

25 **Infrared beam emitter**
Transmits an infrared beam toward the object to be shot for auto focusing.

26 **Infrared beam detector**
The infrared beam transmitted by the infrared beam emitter and then reflected from the object to be shot is received here for the auto focusing of the recorder to function.

B

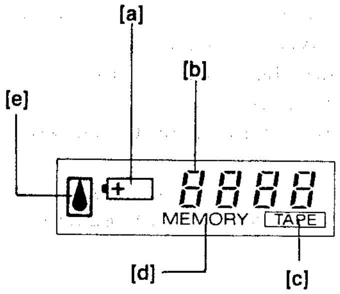




B

**27 VTR POWER switch and lamp [p. 9]**
Press to turn on the recorder section. The lamp lights up. Press again to turn it off. When an AC-V8E/V8UB ac power adaptor or a TT-V8EC/V8UB tuner timer unit is connected, use the power switch of the connected unit as this switch does not function.

**28 Display window**



[ a ] Blinks when the inserted battery is exhausted.
[ b ] The counter changes as the tape moves.
[ c ] Blinks when the recorder is in the CAMERA mode and no cassette is inserted, the recorder is in the CAMERA mode and the tab on the cassette is out, or the tape comes to an end during recording.
[ d ] Indicates that the MEMORY function is activated.
[ e ] Blinks when the moisture has condensed inside the unit.

**29 Cassette holder**

**30 MULTI CONNECTOR [p.19]**
Connect to an RFU-85 RFU adaptor, an AC-V8E/V8UB ac power adaptor or TT-V8EC/V8UB tuner timer unit. To open the lid, slide it in the direction of the arrow.

**31 INSERT button and lamp [p.29]**
Press to insert a recording onto a previously-recorded tape when the recorder is set in the playback pause mode. The lamp lights during operation.

**32 MEMORY button [p.23, p.29]**
To return the tape to the "0000" point, press this button and the MEMORY mark appears. Then press the ◀◀ or ▶▶ button. On insert recording, the recording stops automatically at the "0000" point.

**33 RESET button [p.23, p.29]**
Press to reset the counter to "0000".

**[34] EJECT button and lamp [p.11]**
On cassette insertion or ejection, slide down this button after turning on the unit and the cassette compartment will pop up.

**[35] REC MODE/EDIT switch [p.13, p.28]**
During recording, this switch functions as the recording tape speed SP/LP selector.
The recording time of a cassette in the LP mode is 2 times that in the SP mode.
During playback, normally keep this switch in the left position. Only when playing back a tape for the purpose of recording the playback with another recorder, set this switch to the right "EDIT" position.

**[36] ● (record) switch and lamp [p.10]**
Slide to the right to start recording when only the recorder section is turned on. The lamp lights. When the CAMERA POWER switch is turned on after turning on the recorder section, the recorder is set in the recording pause mode. To start recording, press the **❚❚** or START/STOP button. When only the camera section is turned on, this switch does not function.

**[37] REMOTE connector** (5-pin)
Connect a wired Remote Commander RM-84. The optional RM-E100V editing controller is also connected here.

**[38] EARPIECE jack (mini type) [p.15]**
Connect an earpiece to monitor the sound being recorded during camera or insert recording, or the playback sound while viewing the playback picture in the viewfinder.
Use a Sony earpiece ME-20H or its equivalent.

**[39] ❚❚ (pause) button and lamp**
Press to stop the tape for a moment during recording or playback. The lamp lights. During playback of a recorded tape, a still picture is obtained. Press again to release the pause mode.

**[40] ■ (stop) button**
Press to stop the tape.

**[41] ▶▶ (fast forward) button**
Press to advance the tape. Pressing this button during playback lets you see a high-speed playback.

**[42] ▶ (play) button and lamp**
Press to play back a tape.

**[43] ◀◀ (rewind) button**
Press to wind the tape back. Pressing this button during playback lets you see a high-speed playback in reverse.

## 1-2. POWER SOURCES

### SELECTION OF POWER SOURCES

Operate the unit on one of the following power sources. This manual shows the operations on the battery pack, the ac pack and the car battery. For operation on other power sources, see the instruction manual furnished with the equipment to be used.

| Place | Power source | Accessory to be used |
|---|---|---|
| Indoors | House current | AC pack ACP-85E/85UB or (for the models outside Europe) ACP-88 |
| | | AC power adaptor AC-V8E/V8UB |
| | | Tuner timer unit TT-V8EC/V8UB |
| Outdoors | Battery pack | Battery pack NP-22 |
| In the car | 12 V or 24 V car battery | DC pack DCP-85 and car battery cord DCC-16AE |

**When the TT-V8EC/V8UB is connected**
The following operations are possible.
- Power supply for the CCD-V8AF-E
- Battery charge
- Playback of a tape
- TV programme recording
- Timer recording
- Tape editing

For details on connections and operations, please read the instruction manual furnished with the TT-V8EC/V8UB.

**When the AC-V8E/V8UB is connected**
The following operations are possible.
- Power supply for the CCD-V8AF-E
- Battery charge
- Playback and recording of a tape
- Tape editing

For details on connections and operations, please read the instruction manual furnished with the AC-V8E/V8UB.

## THREE MODES OF OPERATION

The CCD-V8AF-E video camera recorder is equipped with two power switches, the CAMERA POWER switch and VTR POWER switch. Press either or both of these switches according to the operating modes below.

### Modes and their uses

| Operating mode | Power switch to press | Lamp that lights up | Operable buttons | Power switch to turn off |
|---|---|---|---|---|
| **CAMERA mode**<br>Useful for camera recording. (The buttons irrelevant for recording will not work when pressed.) | CAMERA POWER switch | CAMERA POWER lamp | VTR POWER<br>REC MODE/EDIT<br>START/STOP<br>REC REVIEW<br>Power zoom<br>WHITE BALANCE<br>Aperture<br>EJECT<br>RESET<br>MEMORY | CAMERA POWER switch |
| **VTR mode**<br>Useful for playback or TV programme recording. The camera section's power is saved. | VTR POWER switch | VTR POWER lamp | REC MODE/EDIT<br>EJECT<br>◀◀<br>▶<br>▶▶<br>■<br>❚❚<br>●<br>RESET<br>MEMORY<br>INSERT<br>CAMERA POWER | VTR POWER switch |
| **VTR-CAMERA mode**<br>Useful for playback during camera recording or insert camera recording. | VTR POWER switch and CAMERA POWER switch | CAMERA POWER lamp and VTR POWER lamp | all buttons | VTR POWER switch or CAMERA POWER switch |

**When an AC-V8E/V8UB ac power adaptor is connected**
The VTR POWER switch of the video camera recorder will not work. **To turn the video camera recorder on or off, use the VTR POWER switch of the AC-V8E/V8UB ac power adaptor.** Press the VTR POWER switch of the ac power adaptor so that the recorder section of the video camera recorder will be turned on for the VTR mode. To turn on the camera section too for the VTR-CAMERA mode, slide the CAMERA POWER switch on the recorder. To turn off only the camera section, slide the CAMERA POWER switch again. To turn off the entire unit, press the VTR POWER switch on the ac power adaptor.
The video camera recorder cannot be set in the CAMERA (only) mode with the adaptor connected.

**When a TT-V8EC/V8UB tuner timer unit is connected**
The VTR POWER switch and the CAMERA POWER switch of the video camera recorder will not work. To turn the video camera recorder on or off, use the ON/STANDBY switch of the TT-V8EC/V8UB tuner timer unit.

- **To set this video camera recorder to the VTR mode,**
set the INPUT SELECT switch of the TT-V8EC/V8UB to TUNER for recording TV programmes or to LINE for recording input signals from the AUDIO/VIDEO IN jacks of the TT-V8EC/V8UB.
- **To set this video camera recorder to the VTR-CAMERA mode,**
set the INPUT SELECT switch of the TT-V8EC/V8UB to CAMERA.

The video camera recorder cannot be set in the CAMERA (only) mode with the tuner timer unit connected.

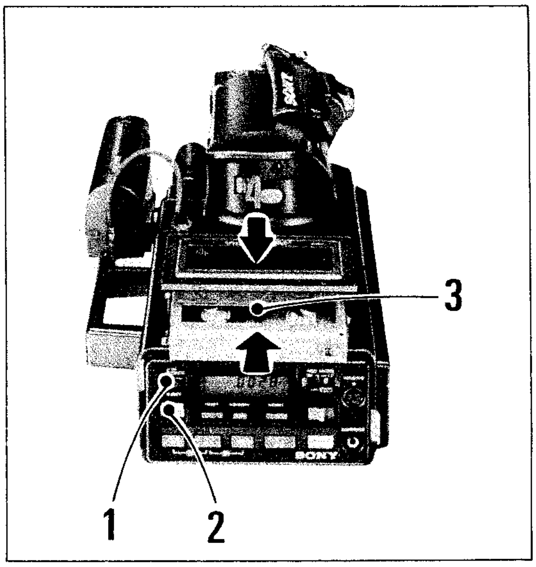
**Recording operation of each mode**

| **Operating mode** | **How to record** |
|---|---|
| CAMERA mode | When the CAMERA POWER switch is turned on, this unit is automatically set in the recording pause mode. Press the START/STOP button to start recording. |
| VTR mode | Slide the ● switch to start recording. |
| VTR-CAMERA mode | When the ● switch is slid or when the CAMERA POWER switch is turned on after turning on the VTR POWER switch, this unit is set in the recording pause mode. Press the **II** or START/STOP button to start recording. |

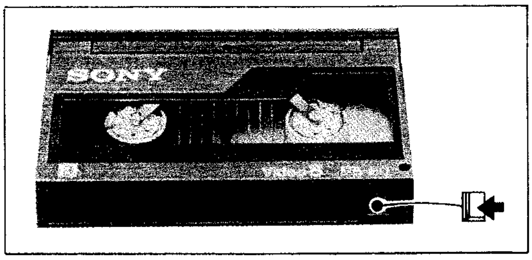
## 1-3. CASSETTE CARE

Always insert a cassette in the correct direction. Never insert it upside down.

C-1



C-2



### CASSETTE INSERTION C-1

1 Turn on the power. (See page 9. Any operating mode is usable.)
2 Press the EJECT button and the cassette compartment will pop up.
3 Insert a cassette with the window upwards and the arrow mark in front.
4 Push down the cassette compartment.

### CASSETTE EJECTION

1 Turn on the power.
2 Press the EJECT button.
3 Take the cassette out and push down the cassette compartment.

### THE TAB ON THE CASSETTE C-2

(The photo is Sony type.)

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased. To avoid erasing a recording, slide the tab out to cover the opening.
When the tab is out, a recording cannot be made. To re-record on a cassette, slide the tab in.

**Note**
Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the kind of tape, thickness of tape, if the tab is out or in, etc.

## 1-4. CAMERA RECORDING

### HOW TO HOLD THE CAMERA

**Adjusting the grip strap** D-1

1 Position your right hand so that your fingertips can easily manipulate the START/STOP button and the power zoom button.
2 Open the cover and adjust the strap so that your grip on the camera feels secure.
3 Close the cover.

**Set the viewfinder** D-2

Turn the viewfinder until it locks (90 degrees).

**Place your right hand through the grip strap and your left hand under the video camera recorder to support it.** D-3

For stable shooting, hold the upper arm firmly against the body.

**When you use your left eye** D-4

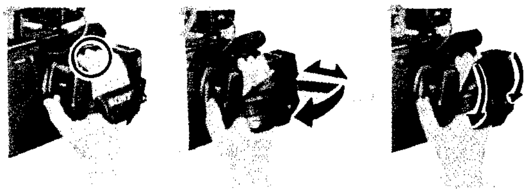
Press the viewfinder slide button and pull the viewfinder out until it locks.

The viewfinder can be turned 90 degrees up and down to make high-angle or low-angle recording possible. D-5

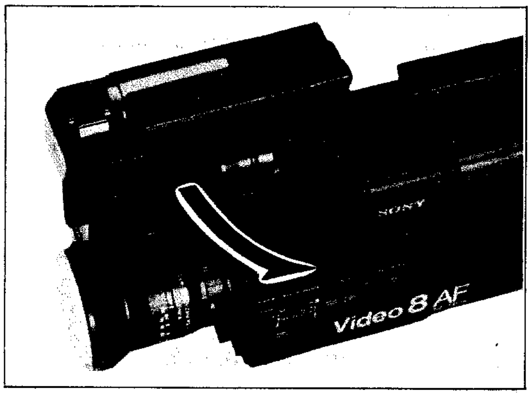
**When shooting from a low angle** D-6

Turn the viewfinder upward so that you can look into it from above. When shooting, use the START/STOP button on the upper surface of the grip.

D-1

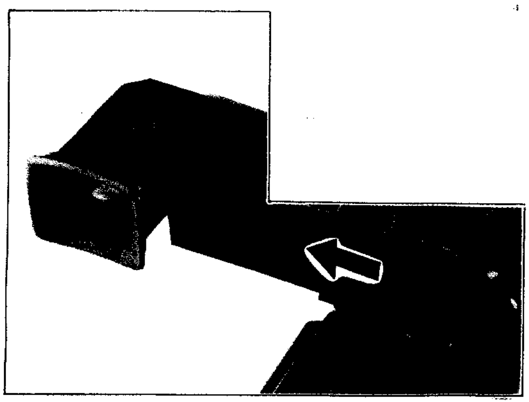


D-2

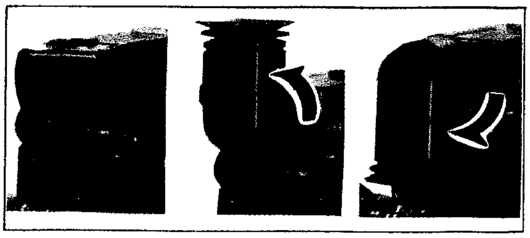


D-3

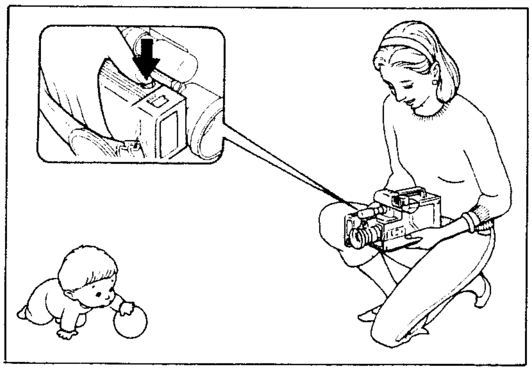
D-4



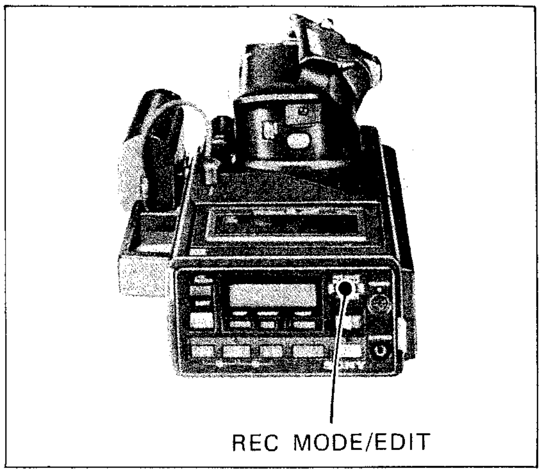
D-5



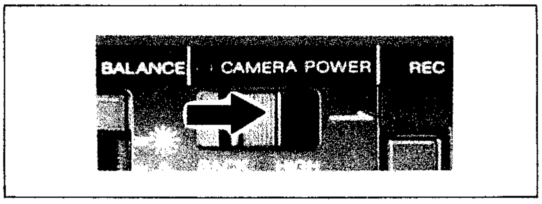
D-6



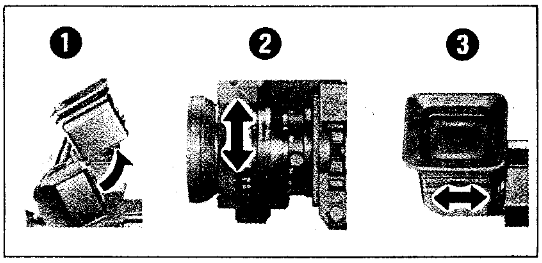
E-1



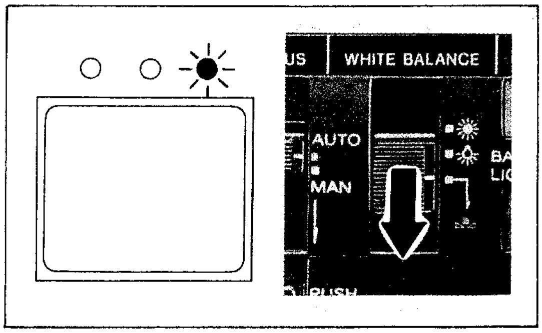
E-2



E-3



E-4



## RECORDING

The NP-22 battery pack is used as the power source.

1 **Set the REC MODE/EDIT switch to the desired position according to the length of the programme to be recorded.** E-1
The recording time of a cassette in the LP mode is twice as long as that in the SP mode.

2 **Slide the CAMERA POWER switch to turn on the power (CAMERA mode) and insert the cassette into the cassette holder.** E-2
The CAMERA POWER lamp lights up. The video camera recorder enters the recording pause mode and the recording and pause lamps light up.

3 **Adjust the viewfinder lens.** E-3
The distance of optimum vision varies from person to person.
**Viewfinder lens adjustment is necessary when using the camera for the first time or after another person has used it.**
❶ Lift up the viewfinder lens.
❷ Focus with the focus ring while observing the viewfinder screen.
❸ Replace the viewfinder lens and set the viewfinder lens adjustment lever so that the subject in the viewfinder is in focus.

4 **Adjust the white balance (automatic adjustment).** E-4
With the white cap on the lens, point the camera at a light source (indoors) or a subject (outdoors) from a distance of at least two meters. Slide the WHITE BALANCE switch all the way down to ⍈ ; the white balance switch will immediately return to the ▪┐ position. The white balance is now adjusted.

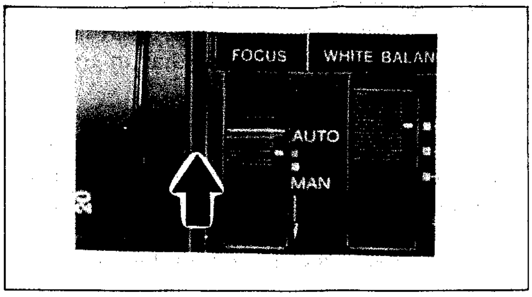
After white balance has been adjusted, the white balance lamp in the viewfinder goes out.
For details on white balance, see the "WHITE BALANCE".

5 **Select the subject to be recorded through the viewfinder.**

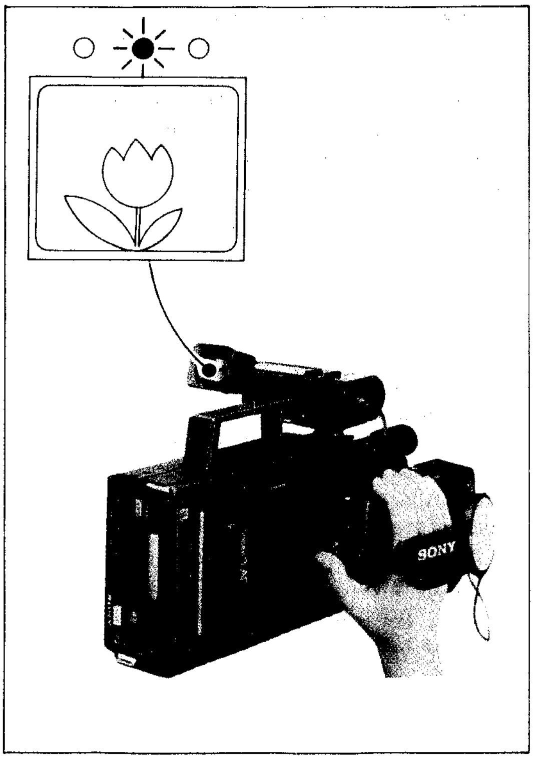
6 **Set FOCUS switch to AUTO.** E-5

7 **Press the START/STOP button to start recording.** E-6
The red lamp in the viewfinder lights up.

E-5



E-6



**To stop recording,** press the START/STOP button again.
The red lamp in the viewfinder goes out and the video camera recorder enters the recording pause mode.
● If you leave the recorder in the pause mode for seven minutes or more, the power of the recorder will be automatically turned off.
● A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.

After using the video camera recorder, slide the CAMERA POWER switch again. The CAMERA POWER lamp goes out.

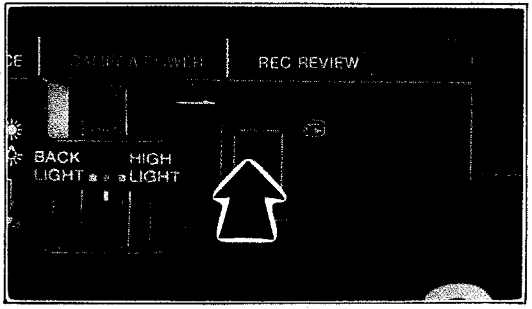
**Note**
Never record an extremely bright object just after recording under dark conditions; otherwise vertical streaks may appear in the picture and be recorded as well.

## SMOOTH RECORDING

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed.
Recording should be started from the recording pause mode. If the cassette has been removed, proceed as follows.

1 Play back the tape to get the point from which the recording is to begin again, referring to the "MONITORING THE PLAYBACK PICTURE ON THE VIEWFINDER SCREEN" on page 15 and stop the tape with the ■ button.
2 Set the recorder to the VTR-CAMERA mode by sliding the CAMERA POWER switch.
3 Slide the ● (record) switch to the right and press the START/STOP button or ▮▮ button to start recording.

I



## INSTANT REPLAY ON THE SPOT (Record review)

When the recorder is set in the CAMERA mode or VTR-CAMERA mode, and then is set in the recording pause mode, the last few seconds of the recording can be played back on the viewfinder screen.

1 When the scene you want to record is finished, press the START/STOP button to stop the tape.
2 Press the ⊂▸ REC REVIEW button. F
The last few seconds of the recorded scene are played back in reverse, and then played back normally.
After playing back the tape up to the end of the recorded portion, the recorder enters the recording pause mode.
3 To restart recording, press the START/STOP button.

## MONITORING THE PLAYBACK PICTURE ON THE VIEWFINDER SCREEN

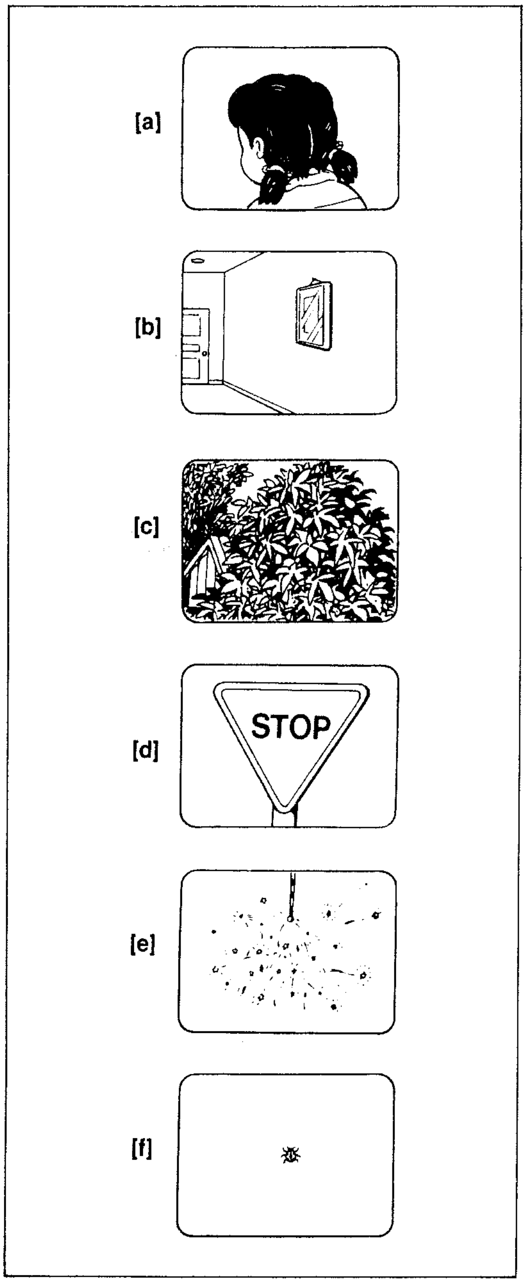
If the recorder is in the CAMERA mode, turn off the CAMERA POWER switch and turn the VTR POWER switch on. Lift up the viewfinder lens to monitor the recorded picture on the viewfinder screen, and rewind and play back the tape. To monitor the playback sound, connect an earpiece to the EARPIECE jack.

## 1-5. AUTO FOCUSING

This video camera recorder focuses by transmitting an infrared beam toward the subject and receiving the reflected beam with an infrared beam detector.

For almost any subject centered in the viewfinder, auto focusing will activate. However, for some subjects listed below, auto focusing does not work correctly and manual focusing is required.

G



**Objects for which the auto focusing does not activate** G

- **Black objects which absorb the infrared beam**
  [ a ] Ex. dark curtain, hair or shade.

- **Objects in which the infrared reflection disperses**
  [ b ] Ex. a smooth surface aimed at from an angle. Auto focusing activates if it is aimed at squarely.

- **Objects in which the infrared reflection is not sufficient**
  [ c ] Ex. bushes, grass or plants in the telephoto position.

- **Objects in which the infrared beam is reflected too much**
  [ d ] Ex. traffic signs, a white wall, mirror, or subject through plate glass.

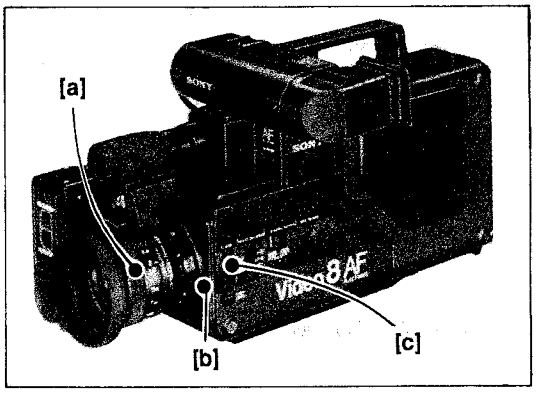
- **Objects which are not solid**
  [ e ] Ex. fireworks, candle flame or smoke.

- **Objects which are extremely small and do not cover more than 1/10 of the viewfinder's view**
  [ f ] Ex. insects.

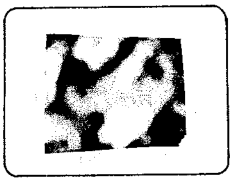
**Notes**

- Auto focusing works up to about 13 meters (43 feet). Adjust the focus manually for a subject more than 13 meters away.
- If conversion lenses or special effect filters are used, focus should be set manually.
- If the lens or the infrared beam detector are dirty, auto focusing does not function correctly. Wipe and clean with a soft cloth.
- When using the auto focus function, do not turn or stop the focus ring forcibly. Do not look into the infrared beam emitter for a long time.

H-1

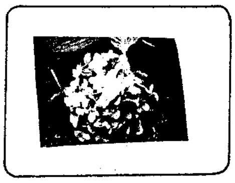


H-2

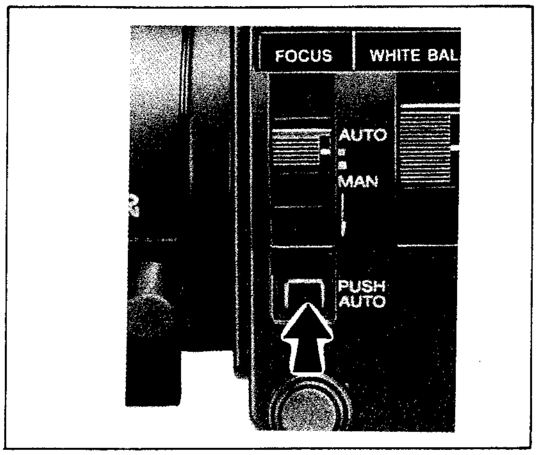


H-3

H-4



I



## 1-6. MANUAL FOCUSING

H-1

[ a ] Focus ring
[ b ] Manual zoom lever
[ c ] FOCUS switch

1. Set the FOCUS switch to MAN.
2. Turn the manual zoom lever to the telephoto position (72) to make the subject as large as possible in the viewfinder. H-2
3. Turn the focus ring to achieve sharp focus. H-3
4. Set the desired shot length using the manual zoom lever. H-4

### SOME HELPFUL HINTS

- Focusing with the lens in wide angle can lead to shots being out of focus. This is because the focusing field is wider than in telephoto, making it harder to achieve definite and sharp focus. Therefore, if the subject is focused in the lens' telephoto position, it will stay in perfect focus regardless of subsequent zooming operation. Focus needs to be reset only if the distance between the camera and the subject changes.
- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus regardless of movement by setting the zoom lever to 12 and the focus ring to 2 m.
- The figures on the focus ring indicate the distance between the subject and the $\phi$ mark on the side of the recorder body.
- When shooting in low light situations, such as indoors, the depth of field for proper focus becomes very shallow. For best results, set the focus in telephoto, and shoot at wide angles.
- If the focal length is less than 1.3 m (approx. 4 ft), remove the lens hood of this camera and attach an optional closeup camera lens instead.

### QUICK FOCUS ADJUSTMENT I

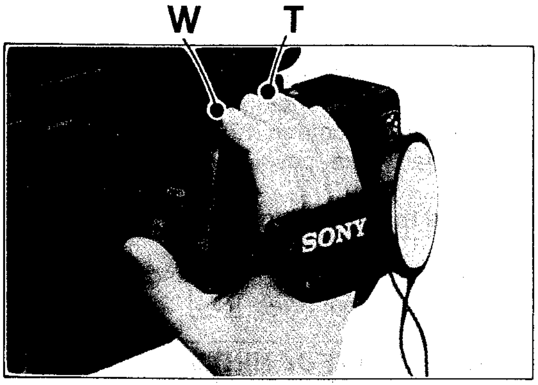
For quick, automatic adjustment of focus while recording in the manual mode, simply press the PUSH AUTO button until the subject is correctly focused.

If you press the PUSH AUTO button before starting recording, you can get a well-focused picture from the beginning of the recording.

## 1-7. ZOOMING

Either manual zoom or power zoom can be used. To make zooming more effective, shoot a still scene for a few seconds at the beginning and the end of zooming.

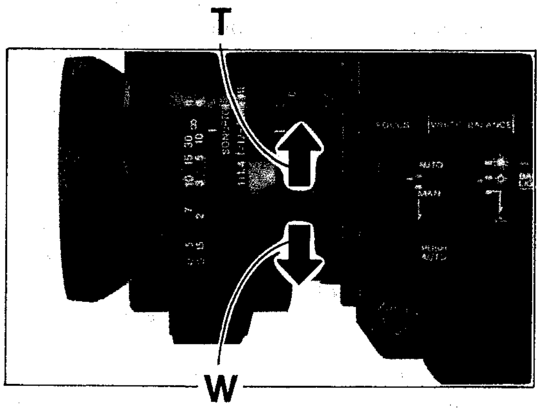
J-1



### POWER ZOOM J-1

Press T for telephoto and W for wide-angle.

J-2



### MANUAL ZOOM J-2

For special effects, when extra fast or very slow zooms are required, manual zooming should be used.

## 1-8. IRIS ADJUSTMENT

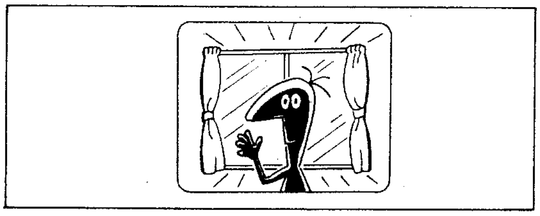
The iris is adjusted automatically with the aperture switch set to ■ (centre). When shooting a scene with strong contrast such as the ones described as follows, adjust the aperture switch to BACK LIGHT or HIGH LIGHT.

- When a backlit shot results in the subject being too dark..........set to BACK LIGHT. K-1
- When a subject is too bright against a dark back ground.............set to HIGH LIGHT. K-2

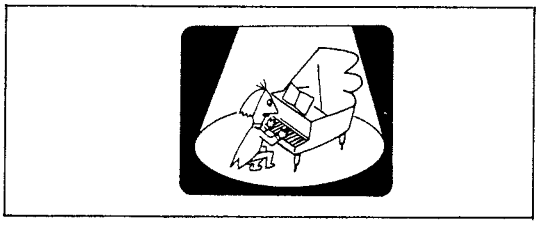
**Notes**

Be sure the picture in the viewfinder has the proper brightness, when the aperture switch has been set to BACK LIGHT or HIGH LIGHT. Wrong selection of the position results in a picture that is too bright or too dark.

K-1



K-2



## 1-9. PLAYBACK OF THE RECORDED TAPE

**The following connections are only for viewing tapes.**
When you are away from home and still want to see the playback picture with an available TV, select one of the following ways.

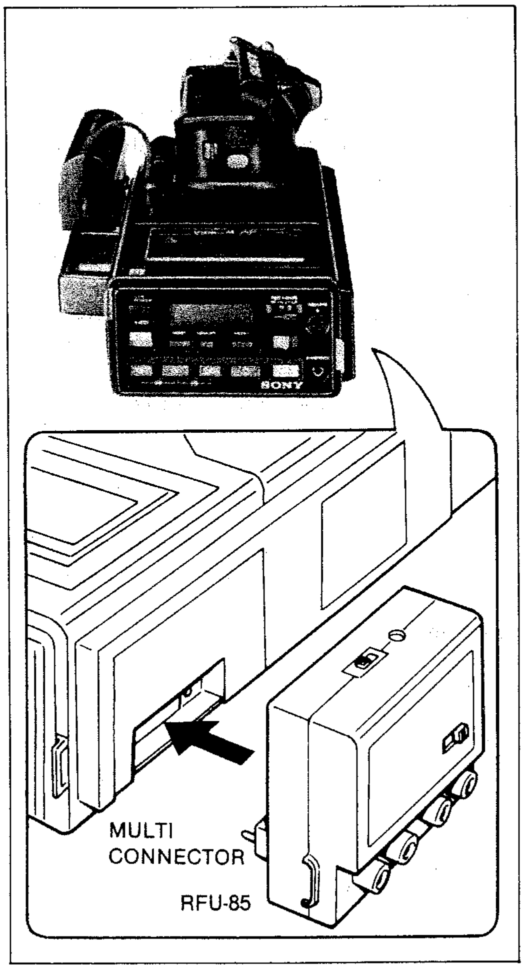
With following connections, TV programmes can be viewed as usual.
**If you also want to record a TV programme, see page 24.**

### CONNECTION

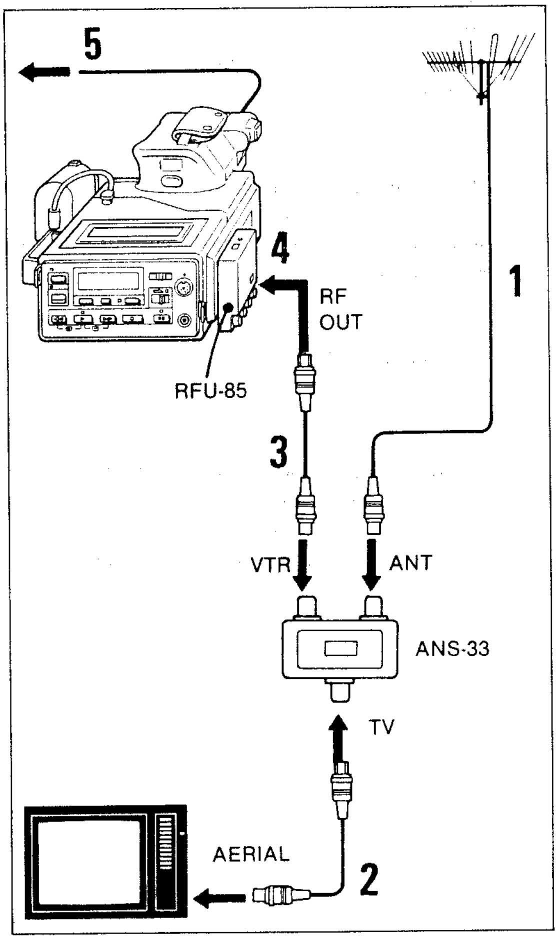
Before making connections, be sure to unplug the mains leads of all the equipments.
**With the supplied ACP-85E/85UB/88 ac pack and RFU-85 RFU adaptor** L-1
Connect the RFU adaptor to the MULTI CONNECTOR of the video camera recorder and insert the ac pack into the battery compartment.

**Note**
When connecting the RFU-85, gently align the guides and holes of the RFU adaptor with the pins and holes of the MULTI CONNECTOR of the recorder. Do not jam the adaptor in as this will damage the pins of the MULTI CONNECTOR.

L-1



L-2



### Connecting a TV without audio/video input connectors L-2

1 Disconnect the aerial cable from the aerial socket of the TV and connect it to the ANT connector of the ANS-33 antenna selector.
2 Connect the TV connector of the ANS-33 to the aerial socket of the TV with the aerial cable supplied to the RFU-85.
3 Connect the VTR connector of the ANS-33 to the RF OUT connector of the RFU-85 with the aerial cable supplied to the RFU-85.
4 Set the RF/LINE selector of the RFU-85 to RF and the I/G selector to the proper position according to the TV system of your area.
5 Connect all the mains leads to mains outlets.

Set the selector switch of the ANS-33 as follows.

For viewing a playback picture, set to VTR.
For TV programme viewing, set to ANT.

**Adjustments**

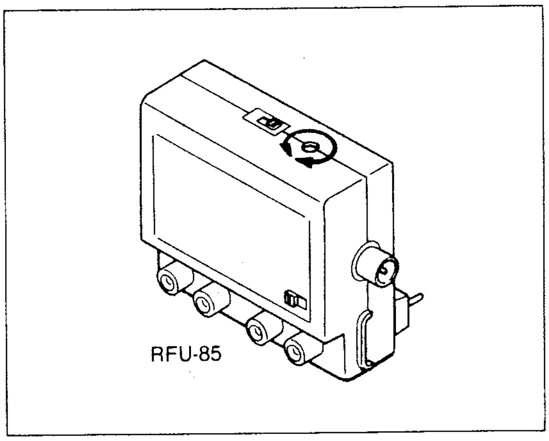
One of the television programme positions must be adjusted to receive the signal from the video camera recorder.

1 Turn on the TV and select a programme position which is not being used to receive a TV station.
2 Press the VTR POWER switch of the video camera recorder.
3 Slide the CAMERA POWER switch of the video camera recorder.
4 Set the selector switch of the ANS-33 to VTR.
5 Tune the channel of the TV until you see the picture and hear the sound to be shot by the recorder.

If you are not sure how to adjust your TV, please refer to the TV's instruction manual or consult your dealer.

**Whenever you use the video camera recorder, you should set the TV to the programme position selected in this adjustment.**

L-3

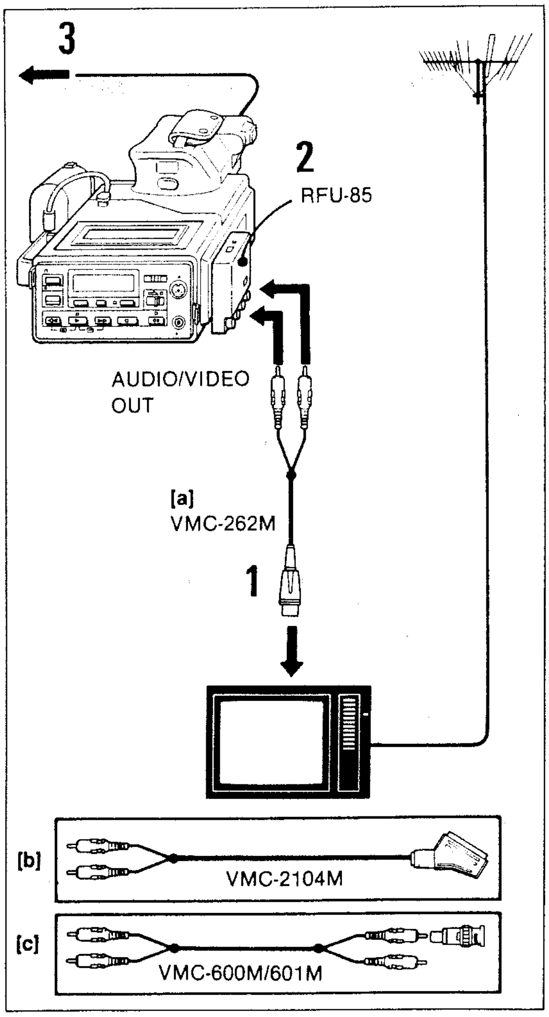


**If the playback picture is not free of disturbance**

1 Set the selector switch of the ANS-33 to ANT.
2 Adjust the programme position of the TV to a channel between UHF channels 30 and 39 with the tuning control or the fine tuning control on the TV, so that the TV screen shows no picture and so that a steady rustling sound or no sound is heard.
3 Set the selector switch of the ANS-33 to VTR.
4 Slowly turn the RF channel screw of the RFU-85 with the supplied screwdriver, until you see an undistorted picture of what is being shot. L-3

   Now the TV adjustment is complete.

L-4



### Connecting a TV receiver/colour monitor which is equipped with the following connector(s) L-4

**6-pin DIN connector** [a]

Leave the aerial cable connected to the aerial socket of the TV.

1 Connect the AUDIO/VIDEO OUT jacks of the RFU-85 to the 6-pin DIN connector of the TV with an optional VMC-262M audio video cable.
2 Set the RF/LINE selector of the RFU-85 to LINE.
3 Connect all the mains leads to mains outlets.

With this connection, you don't have to select the channel for the video camera recorder. Instead, set the TV/VIDEO select button of the TV to the proper setting.

For viewing a playback picture, set to the VIDEO mode.

For TV programme viewing, set to the TV mode.

When a colour TV tuner is not connected to a colour monitor, TV programmes can't be viewed.

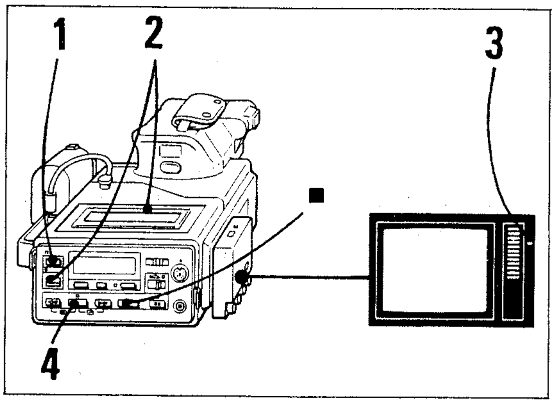
**When a 21-pin connector (EUROCONNECTOR) is available on the TV** [b]

Use an optional VMC-2104M audio video cable instead of the VMC-262M audio video cable in step **1**.

**When audio/video connectors are available on the TV** [c]

Use an optional VMC-600M/601M audio video cable instead of the VMC-262M audio video cable in step **1**.

L-5



## OPERATION L-5

The viewfinder cable need not be connected.

1 Turn on the power of the equipment to be used.
2 Insert a cassette.
3 Turn on the TV or colour monitor.
  When a TV without audio/video input connectors is connected, select the programme position which is adjusted for the video camera recorder.
  When a TV with 6-pin DIN, 21-pin or audio/video connectors is connected, set the TV/VIDEO select button to the VIDEO mode.
4 Press the ▶ button of the video camera recorder.
  The lamp lights and the playback starts.

To stop the playback, press the ■ button.

When the tape comes to an end, the unit automatically stops.

## DIFFERENT FORMS OF PLAYBACK

**To obtain a still picture**

Press the ❚❚ button during playback.
Streaks will appear in the still picture. The sound will be muted. To resume normal playback, press the ❚❚ button again.
When the pause mode lasts for more than approximately 7 minutes, the pause mode will be automatically released and the unit will be set in the stop mode.

**Note**

When a tape is recorded in the SP mode, a still picture may be noisy with many streaks and become black-and-white.

**To view the picture at high speed**

Keep pressing the ▶▶ or ◀◀ button during playback. For high-speed playback picture in the forward direction, press the ▶▶ button. For high-speed playback picture in the reverse direction, press the ◀◀ button.
Streaks will appear in the high-speed pictures. The sound will be muted.
Release the button for normal playback.

**Note**

When a tape is recorded in the SP mode, a high-speed picture may be played back sometimes in black-and-white and streaks will be wider than those of the LP recorded tape.

## 1-10. USE OF THE TAPE COUNTER

### TO INDEX THE WHOLE TAPE

When the unit is turned on, the tape counter will appear in the display window. Press the RESET button at the beginning of the tape so that the counter shows "0000". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.
Write the counter readings you want to remember on the label of the cassette.

### TO RETURN TO A PRE-REGISTERED POINT

During recording or playback, press the RESET button at the point you later want to locate. The counter will be set at "0000".

1 Press the ■ button to stop the tape, when the recording or playback has finished.
2 Press the MEMORY button and the "MEMORY" mark will appear in the display window.
3 Press the ▶▶ or ◀◀ button.
The tape will be sent forward or in reverse and stop automatically when the counter reaches "0000".

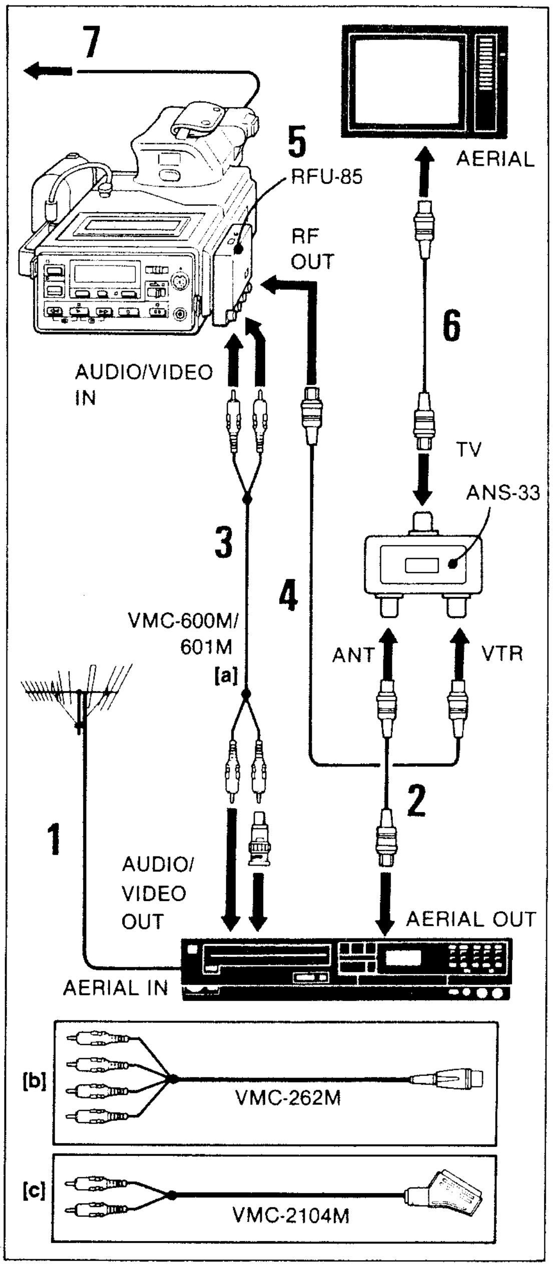
**Notes**

● While the "MEMORY" mark appears in the display window, the counter cannot be reset to "0000", therefore, press the MEMORY button to cancel the function and then press the RESET button.

● The counter reading and the point of the tape may not correspond exactly.

## 1-11. TV PROGRAMME RECORDING

M-1



**The following connections make both TV programme viewing/recording and tape playing possible.**

The viewfinder cable need not be connected.

## PREPARATION

Before making connections, be sure to unplug the mains leads of all the equipments.

**With the ACP-85E/85UB/88 ac pack and RFU-85 RFU adaptor**

Connect the RFU adaptor to the MULTI CONNECTOR of the video camera recorder and insert the ac pack into the battery holder. (See page 19.)

**Connecting a TV without audio/video input connectors and a VTR without an input select switch** M-1

## CONNECTION

1 Connect the aerial cable to the aerial in socket of the VTR.
2 Connect the aerial out socket of the VTR to the ANT connector of the ANS-33 with the aerial cable supplied with the RFU-85.
3 Connect the audio/video output connectors of the VTR to the AUDIO/VIDEO IN jacks of the RFU-85 with the optional VMC-600M/601M audio video cable [a].
4 Connect the VTR connector of the ANS-33 to the RF OUT connector of the RFU-85 with the aerial cable supplied with the RFU-85.
5 Set the RF/LINE selector of the RFU-85 to RF and the I/G selector to the proper position according to the TV system of your area.
6 Connect the TV connector of the ANS-33 to the aerial socket of the TV with an optional aerial cable.
7 Connect all the mains leads to mains outlets.

**When a 6-pin DIN connector is available on the VTR** [b]

Use an optional VMC-262M audio video cable instead of the VMC-600M/601M audio video cable.

**When a 21-pin connector (EUROÇONNECTOR) is available on the VTR** [c]

Use an optional VMC-2104M audio video cable instead of the VMC-600M/601M audio video cable.

## OPERATION

**Recording**

1 Turn on the power of the equipment to be used.
2 Set the selector switch of the ANS-33 to VTR.
3 Insert the cassette into the video camera recorder.
4 Select the channel to be recorded with the programme select button on the VTR and select the programme position for the video camera recorder on the TV.
5 Start recording.

**Playback**

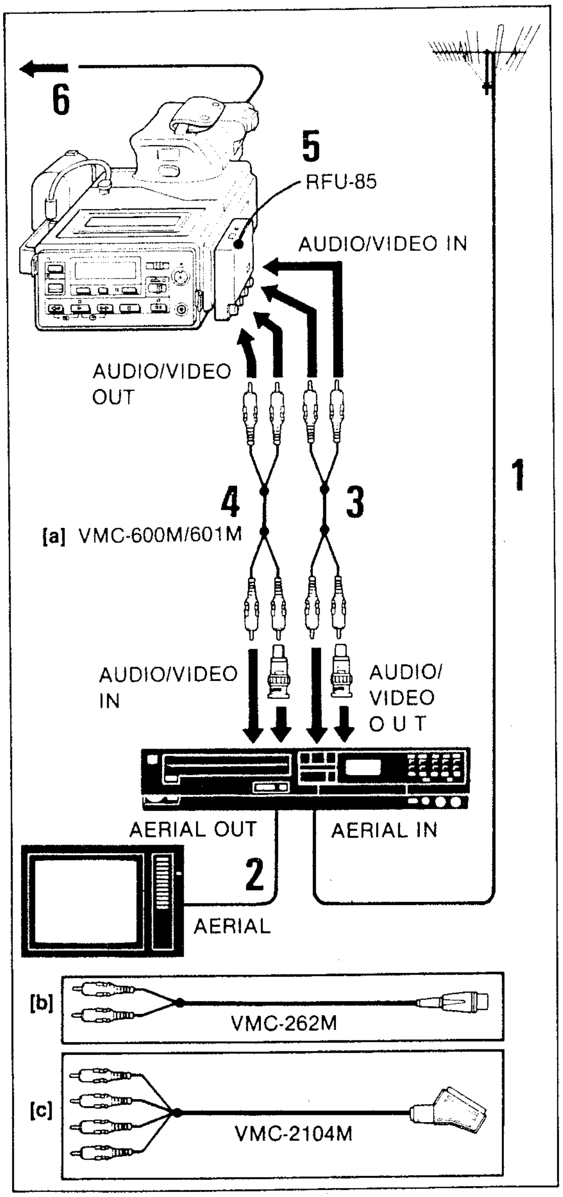
1 Turn on the power of the video camera recorder and the TV.
2 Set the selector switch of the ANS-33 to VTR.
3 Select the programme position for the video camera on the TV.
4 Start playback.

**Recording one TV programme while viewing another**

1 Set the selector switch of the ANS-33 to ANT.
2 Select the desired programme position on the TV.

## Connecting a TV without audio/video input connectors and a VTR with an input select switch M-2

M-2



## CONNECTION

1 Connect the aerial cable to the aerial in socket of the VTR.
2 Connect the aerial out socket of the VTR to the aerial socket of the TV with the aerial cable supplied with the RFU-85.
3 Connect the audio/video output connectors of the VTR to the AUDIO/VIDEO IN jacks of the RFU-85 with the optional VMC-600M/601M audio video cable.
4 Connect the AUDIO/VIDEO OUT jacks of RFU-85 to the audio/video input connectors of the VTR with an optional VMC-600M/601M audio video cable [a].
5 Set the RF/LINE selector of the RFU-85 to LINE.
6 Connect all the mains leads to mains outlets.

**When a 6-pin DIN connector is available on the VTR** [b]
Use an optional VMC-262M audio video cable instead of the VMC-600M/601M audio video cable.

**When a 21-pin connector (EUROCONNECTOR) is available on the VTR** [c]
Use an optional VMC-2104M audio video cable instead of the VMC-600M/601M audio video cable.

## OPERATION

### Recording

1 Turn on the power of the equipment to be used.
2 Insert the cassette into the video camera recorder.
3 Set the input select button of the VTR to TUNER.
4 Select the programme position to be recorded with the programme select button on the VTR and select the programme position for the VTR on the TV.
5 Start recording.

### Playback

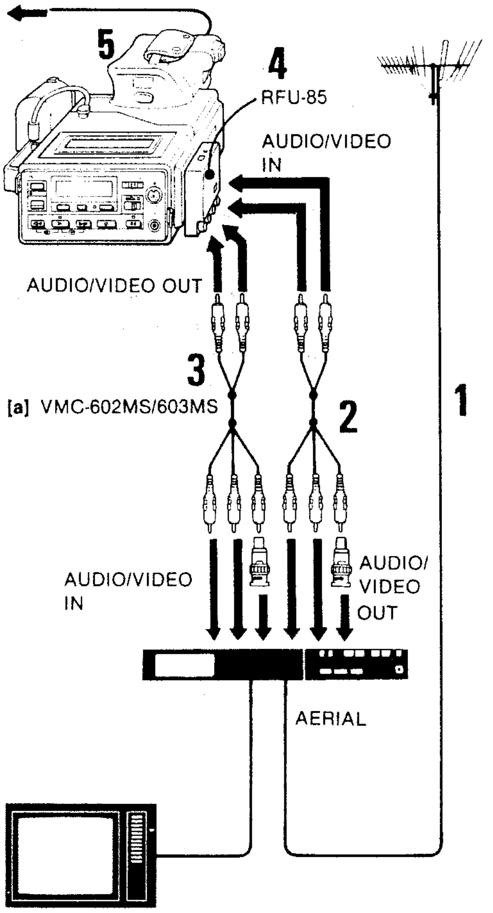
1 Turn on the power of the equipment to be used.
2 Set the input select button of the VTR to LINE.
3 Select the programme position for the VTR on the TV.
4 Start playback.

### Recording one TV programme while viewing another

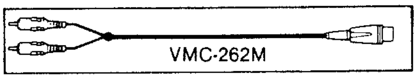
Select the desired programme position on the TV.

When a stereo VTR is used, use an optional VMC-602MS/603MS audio video cable instead of a VMC-600M/601M audio video cable or use an optional VMC-2106S audio video cable instead of a VMC-2104M audio video cable.

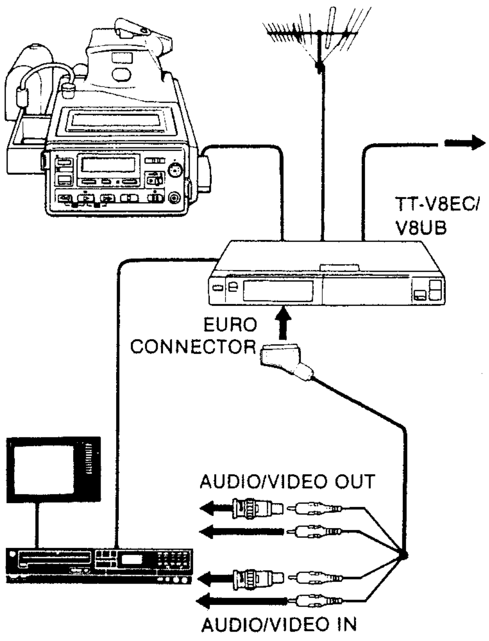
M-3


5
4
RFU-85
AUDIO/VIDEO IN
AUDIO/VIDEO OUT
3
[a] VMC-602MS/603MS
2
1
AUDIO/VIDEO IN
AUDIO/VIDEO OUT
AERIAL

[b]



M-4


TT-V8EC/ V8UB
EURO CONNECTOR
AUDIO/VIDEO OUT
AUDIO/VIDEO IN

## Connecting a TV with audio/video input connectors, or a colour monitor and a TV tuner M-3

### CONNECTION

The colour monitor should be connected to the TV tuner first.

1 Connect the aerial cable to the aerial socket of the TV tuner.
2 Connect the audio/video output connectors of the TV or the TV tuner to the AUDIO/VIDEO IN jacks of RFU-85 with an optional VMC-602MS/603MS audio video cable.
3 Connect the AUDIO/VIDEO OUT jacks of the RFU-85 to the audio/video input connectors of the TV or the TV tuner with an optional VMC-602MS/603MS audio video cable [a].
4 Set the RF/LINE selector of the RFU-85 to LINE.
5 Connect all the mains leads to mains outlets.

**When a 6-pin DIN connector is available on the TV tuner** [b]
Use an optional VMC-262M audio video cable instead of the VMC-602MS/603MS audio video cable.

The optional TT-V8EC/UB tuner timer unit can be connected directly to the MULTI CONNECTOR of this camera recorder. M-4

### OPERATION

**Recording**

1 Turn on the power of the equipment to be used.
2 Insert the cassette into the video camera recorder.
3 Set the input select button of the TV or the TV tuner to TV, and select the programme position to be recorded.
4 Start recording.

**Playback**

1 Turn on the power of the equipment.
2 Set the input select button of the TV or the TV tuner to VIDEO.
3 Insert the cassette into the video camera recorder and start playback.

## TO STOP THE TAPE MOMENTARILY

Press the ❚❚ button. The TV programme can be seen on the TV but the picture will not be recorded.
To resume recording, press the ❚❚ button again.
When the recording pause mode lasts for approximately 7 minutes, the pause mode will be automatically released and the unit will be set in the stop mode.

**With the above connections, TV programmes can be viewed as usual.**

**Notes**

● When the unit is set in the VTR-CAMERA or the CAMERA mode, a TV programme cannot be recorded as the camera takes precedence. For TV programme recording, turn on the VTR power only.

● When the tape comes to the end, the "TAPE" mark will blink in the display window. When the tape has ended, the unit will be automatically set in the stop mode.

## 1-12. INSERT RECORDING

You can insert (record) video and audio simultaneously from the camera, a TV or a VTR onto any recorded tape.

### PREPARATION

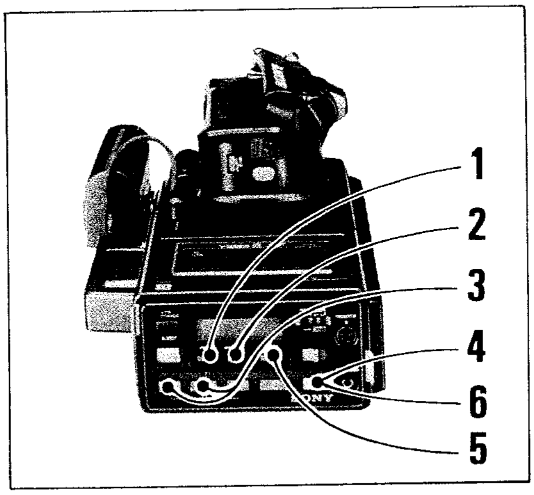
Make the necessary connections. For details on each connection and operation, refer to the corresponding page.

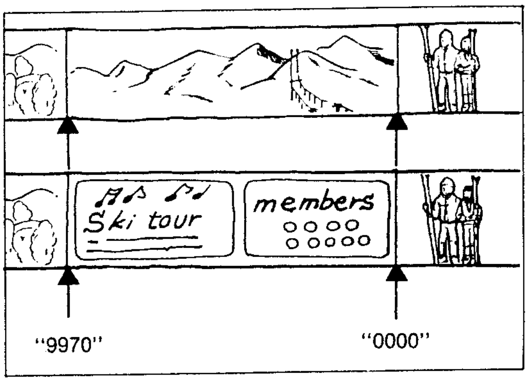
**To insert camera recording** [P.13]
Set the video camera recorder in the VTR-CAMERA mode by pressing the VTR POWER and CAMERA POWER switches.

**To insert a TV programme** [P.24]
Make the necessary connections as described in TV programme recording.

### OPERATION N

N





Monitor the playback picture of the recorded tape on the viewfinder screen and decide where the insertion should be made.

1 Find the position for the end of the insert and press the RESET button. The counter returns to "0000".
2 Press the MEMORY button. The "MEMORY" mark appears on the display window.
3 Rewind the tape back a little further than the point where the insert should begin (e.g. "9970") by pressing the ◀◀ button during playback.
4 Release the ◀◀ button and press the ❚❚ button at the place the insert should begin. The unit is set in the playback pause mode.
5 Press the INSERT button. The unit is set in the insert pause mode. The ▶ lamp goes out and the INSERT and the ❚❚ lamp will light.
6 Play the inserting source of the connected equipment and:
For camera recording, press the START/STOP or the ❚❚ button.
For other recording, press the ❚❚ button.
The insert recording will start and the counter reading will increase.
The insert recording stops at the counter reading "0000" and the INSERT lamp goes out.

Instead of deciding the point where the insert should end, as described in step **1**, you may wish to continue the insertion and stop it at a suitable point while monitoring the inserted recording. In this case, start operating from step **3**. Proceed with the remaining steps and stop the insertion by pressing the ■ button.

When the pause mode lasts for approximately 7 minutes, the pause mode will be automatically released and the unit will be set in the stop mode.

## 1-13. NOTES ON MOISTURE CONDENSATION

### MOISTURE INSIDE THE RECORDER SECTION

If the unit is brought directly from a cold to a warm location, moisture may condense on the drum assembly inside the unit. In this condition, the tape may adhere to the head drum. Take the cassette away.
To prevent possible damage under these circumstances, the recorder section is furnished with a moisture sensor. If moisture is present, the 💧 mark will blink when the power is turned on and the function buttons except for the EJECT button will not work. When a cassette has been inserted, the 💧 mark and the EJECT lamp will blink and the tape will be automatically unloaded.

**If the 💧 mark blinks, eject the cassette and proceed as required.**

**When a battery pack is used as the power source**
Turn off the unit and let the unit sit with the cassette compartment open until the moisture evaporates and the 💧 mark goes out when the power is turned on. In case the 💧 mark does not go out in a few hours, use an ac power adaptor or a dc pack as the power source.

**When an ac power adaptor or a dc pack is used as the power source**
Leave the recorder section turned on, so that the heater built in the recorder will activate to make the moisture evaporate.

When the moisture has completely evaporated, the 💧 mark will go out. Then operate the unit as usual.

**Moisture on the tape**
If a tape is brought directly from a cold to a warm location, moisture may condense on the surface of the tape. When the tape is inserted and a tape transport button (such as the ▶ button) is pressed, the EJECT lamp will blink and the function buttons except for the EJECT button will not work. In this case, the 💧 mark will not appear.

**If the EJECT lamp blinks, eject the cassette and let the unit and the cassette sit until the moisture evaporates.**

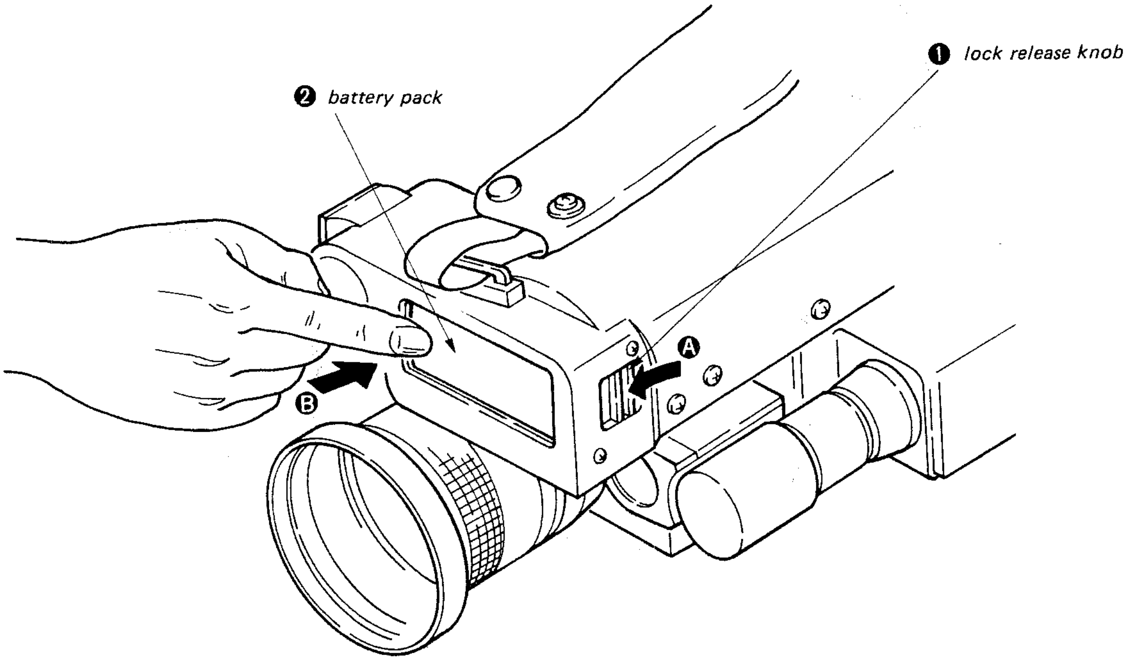
**When to use**
The unit can be used again if the EJECT lamp does not light when a cassette is inserted and a tape transport button is pressed.

**Moisture condensation on the lens**
Moisture may condense also on the lens when the recorder is brought in from a cold place to an extremely warm place, causing the lens to become dim. If this occurs, turn off the power and leave the recorder unused at least for an hour.

# SECTION 2
# DISASSEMBLY

## 2-1. REMOVAL OF THE BATTERY PACK

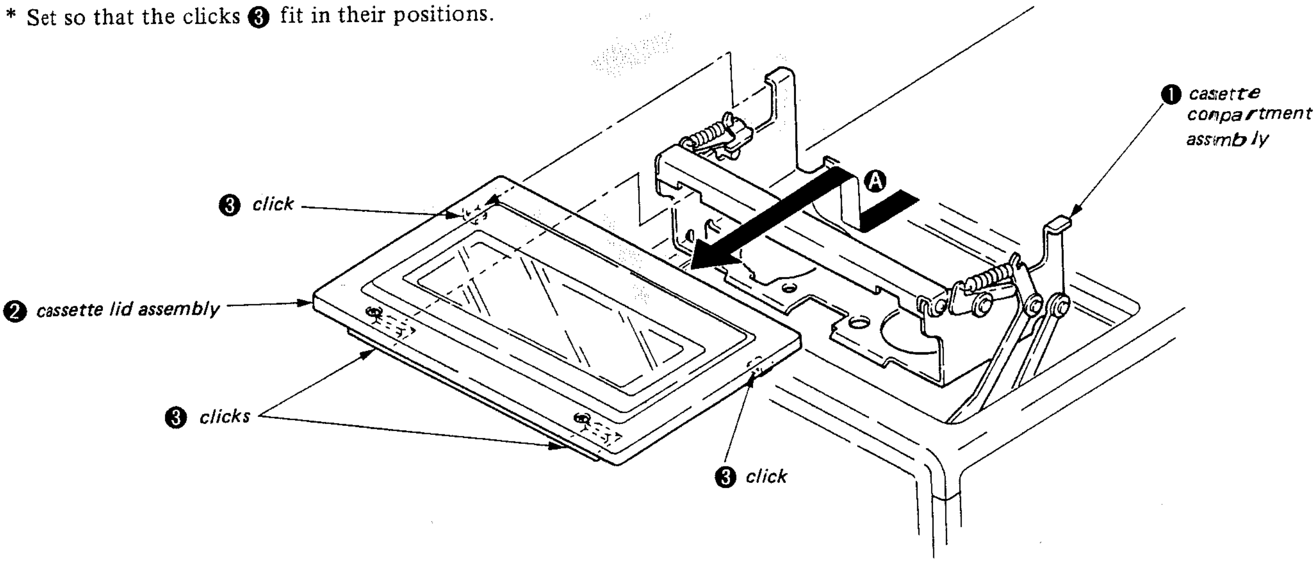
1) Press the lock release knob ❶ in the direction shown by the arrow Ⓐ and push the battery pack ❷ in the direction shown by the arrow Ⓑ until a clicking tone is audible.
2) Remove the battery pack ❷ pushed out by a spring force.


❶ lock release knob
❷ battery pack
Ⓐ
Ⓑ

## 2-2. REMOVAL OF THE CASSETTE LID ASSEMBLY

1) Turn on power and press the EJECT button to lift the cassette compartment assembly ❶ .
2) Slide the cassette lid assembly ❷ in the direction shown by the arrow Ⓐ and remove it.

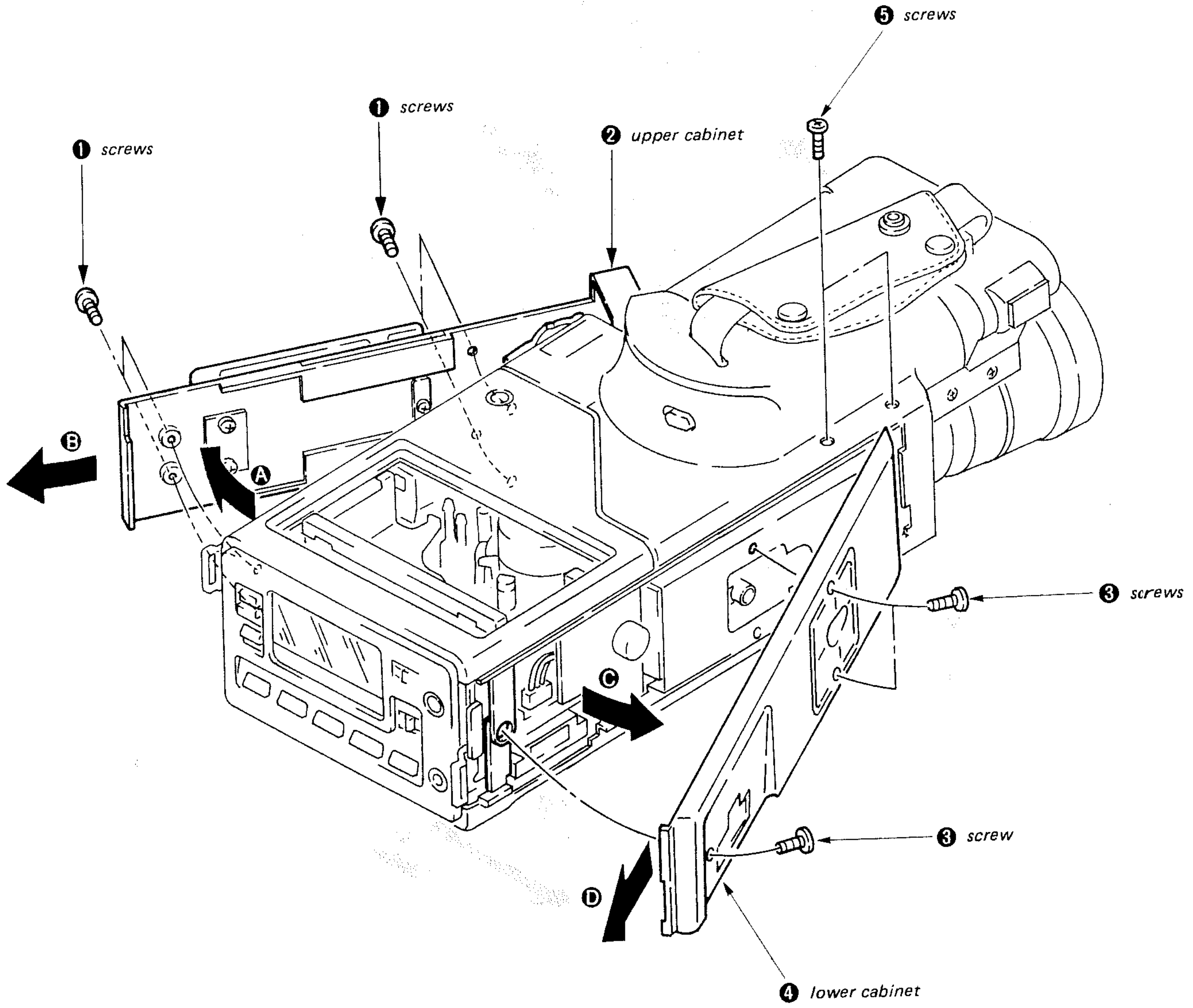
* Set so that the clicks ❸ fit in their positions.


❶ cassette compartment assembly
❸ click
Ⓐ
❷ cassette lid assembly
❸ clicks
❸ click

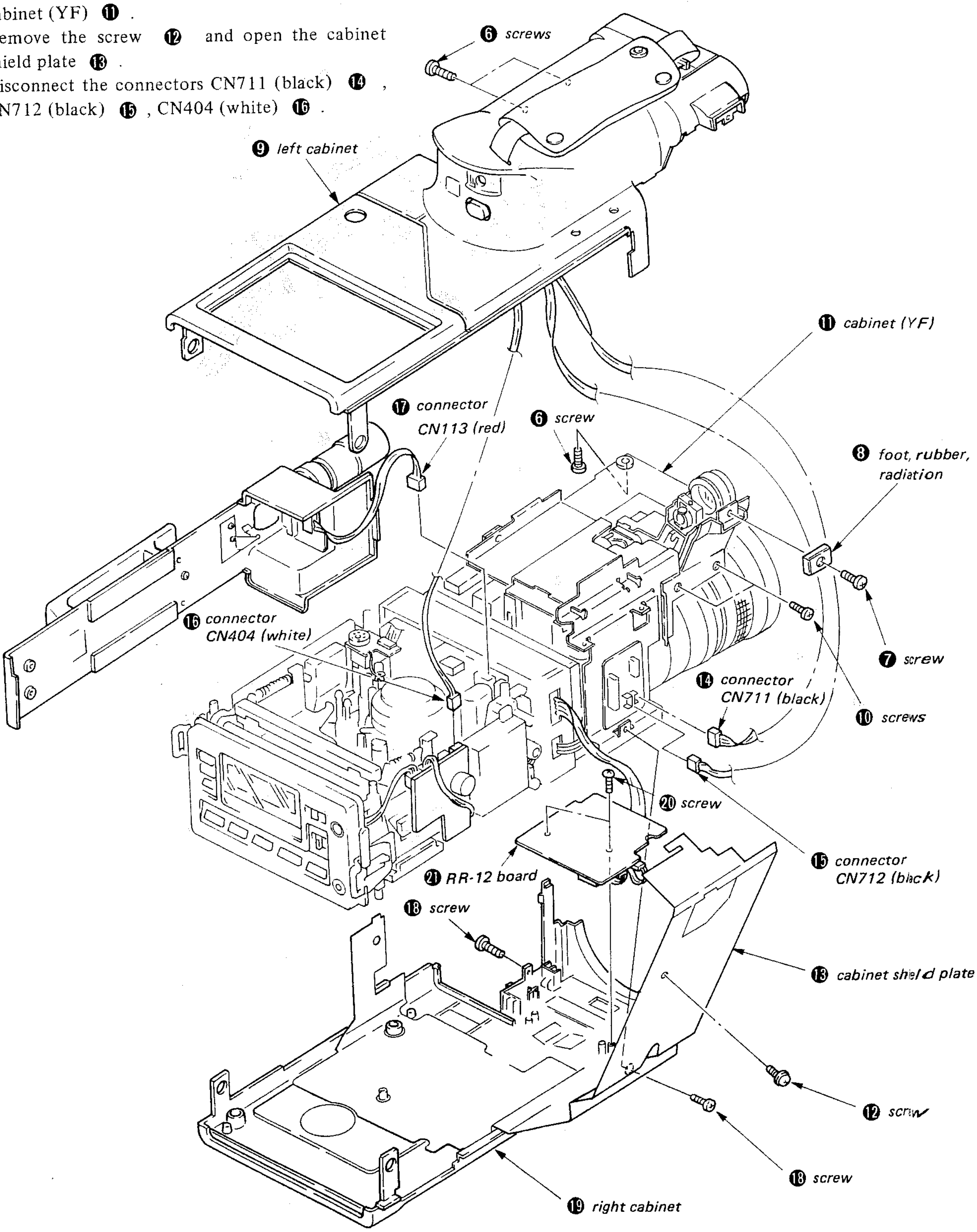
## 2-3. REMOVAL OF THE CABINET

1) Remove the four screws ❶ .
2) Open the upper cabinet ❷ in the direction shown by the arrow Ⓐ and remove it in the direction shown by the arrow Ⓑ . Be careful not to break the wiring cord which connects the upper cabinet ❷ of the main unit.
3) Remove the three screws ❸ .
4) Open the lower cabinet ❹ in the direction shown by the arrow Ⓒ and remove it in the direction shown by the arrow Ⓓ .
5) Remove the two screws ❺ .

*To next page*

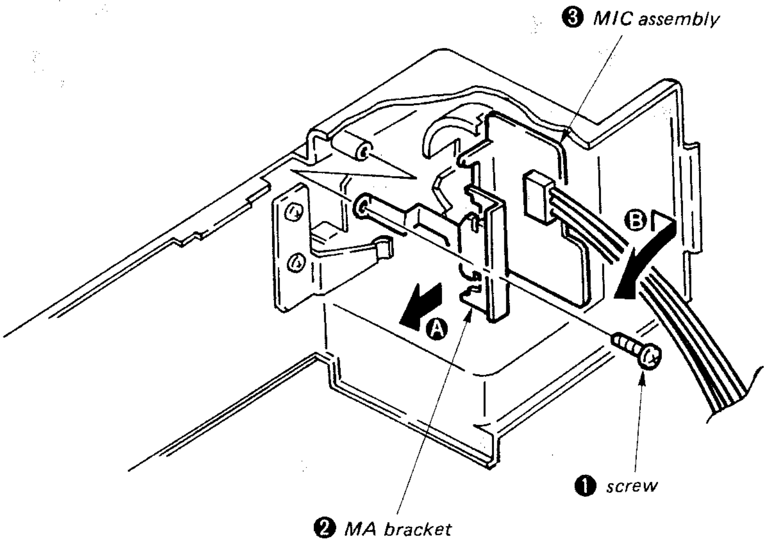

❺ screws
❶ screws
❶ screws
❷ upper cabinet
Ⓑ
Ⓐ
❸ screws
Ⓒ
❸ screw
Ⓓ
❹ lower cabinet

6) Remove the three screws ❻ .
7) Remove the screw ❼ and remove the foot, rubber, radiation ❽ .
8) Remove the left cabinet ❾ .
9) Remove the two screws ❿ and remove the cabinet (YF) ⓫ .
10) Remove the screw ⓬ and open the cabinet shield plate ⓭ .
11) Disconnect the connectors CN711 (black) ⓮ , CN712 (black) ⓯ , CN404 (white) ⓰ .
12) Disconnect the connector CN113 (red) ⓱ .
13) Remove the two screws ⓲ and remove the right cabinet ⓳ .
14) Remove the two screws ⓴ and remove the RR-12 board ㉑ .


❻ screws
❾ left cabinet
⓫ cabinet (YF)
⓱ connector CN113 (red)
❻ screw
❽ foot, rubber, radiation
⓰ connector CN404 (white)
❼ screw
⓮ connector CN711 (black)
❿ screws
⓴ screw
⓯ connector CN712 (black)
㉑ RR-12 board
⓲ screw
⓭ cabinet shield plate
⓬ screw
⓲ screw
⓳ right cabinet

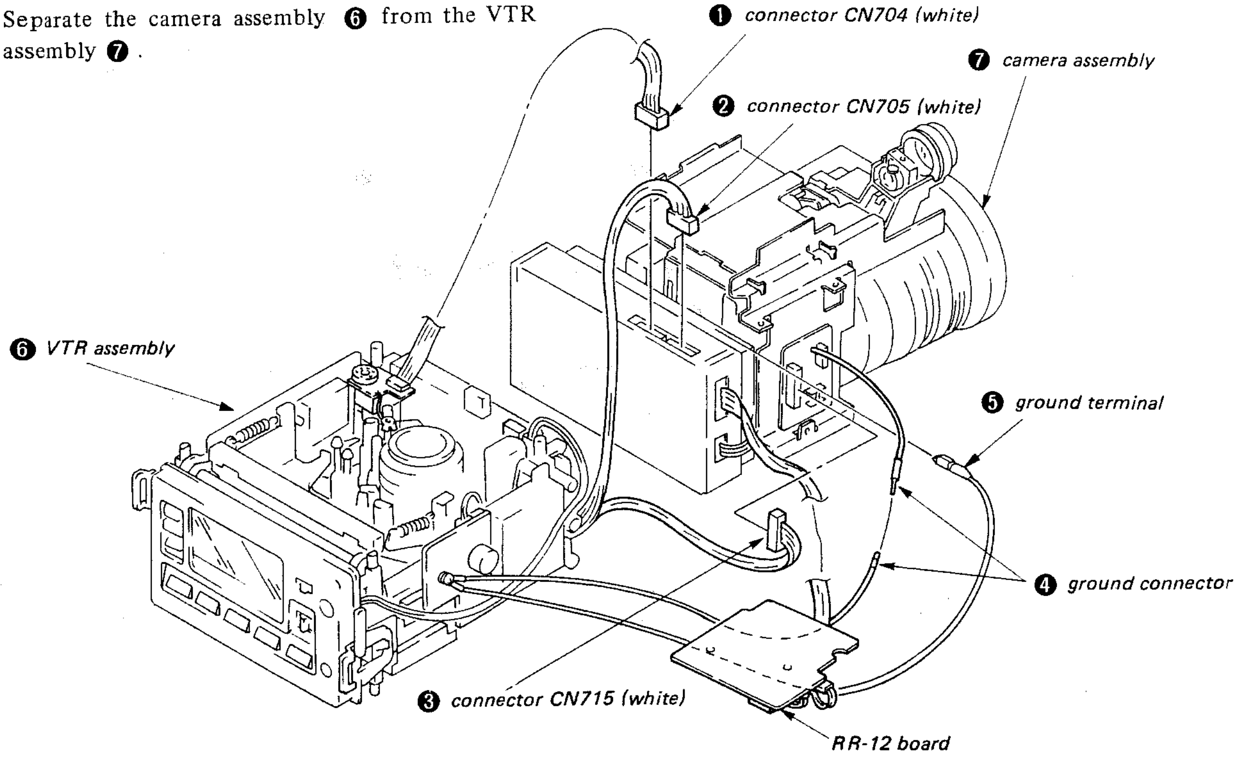
## 2-4. REMOVAL OF THE MIC ASSEMBLY

1) Remove the screw ❶.
2) Remove the MA bracket ❷ in the direction shown by the arrow Ⓐ .
3) Remove the MIC assembly ❸ in the direction shown by the arrow Ⓑ .


❸ MIC assembly
Ⓑ
Ⓐ
❶ screw
❷ MA bracket

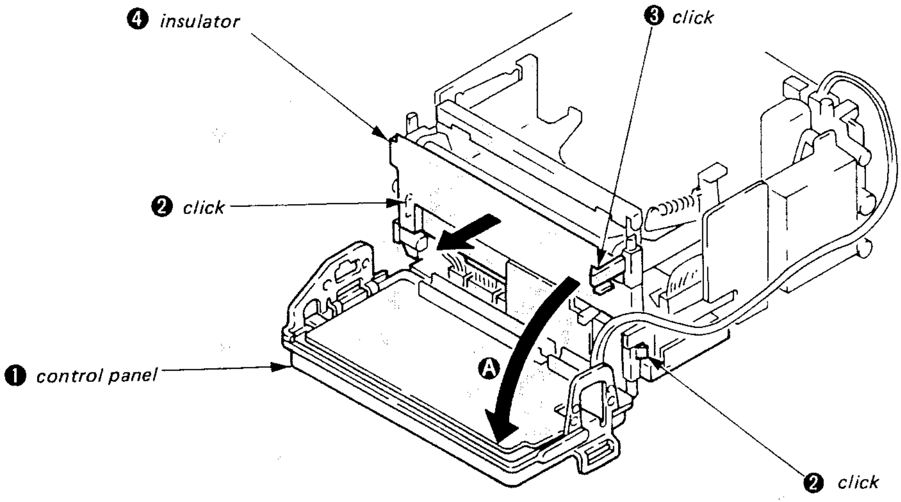
## 2-5. SEPARATION OF THE VTR ASSEMBLY AND CAMERA ASSEMBLY

1) Disconnect the connectors CN704 (white) ❶ , CN705 (white) ❷ and CN715 (white) ❸ .
2) Disconnect the ground connector ❹ and the ground terminal ❺ .
3) Separate the camera assembly ❻ from the VTR assembly ❼ .

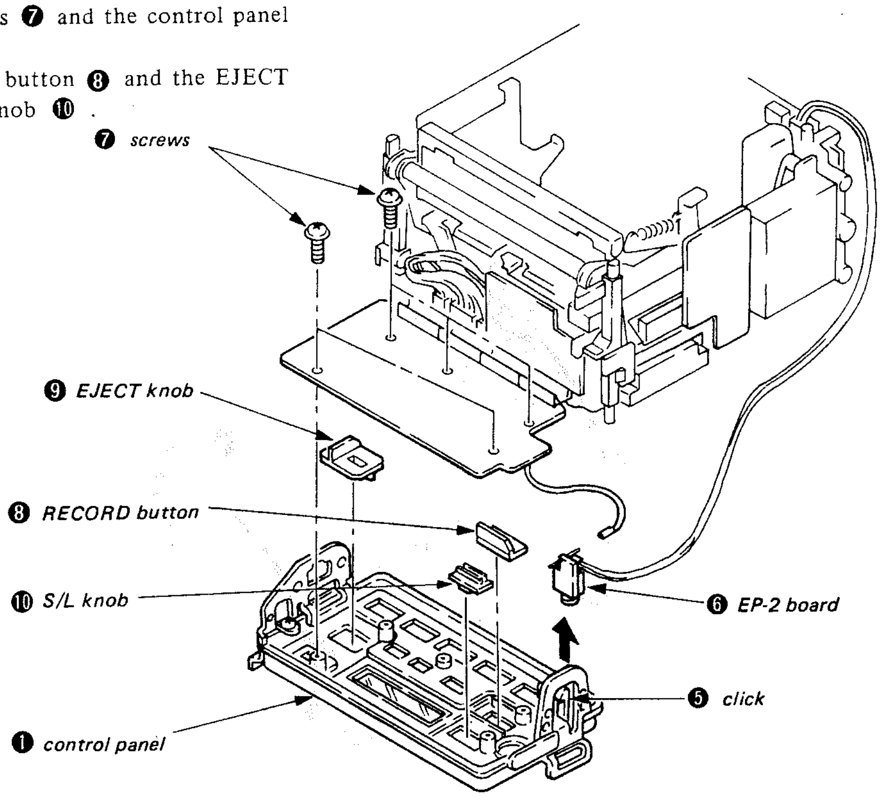

❶ connector CN704 (white)
❼ camera assembly
❷ connector CN705 (white)
❻ VTR assembly
❺ ground terminal
❹ ground connector
❸ connector CN715 (white)
RR-12 board

## 2-6. REMOVAL OF THE CONTROL PANEL

1) Disengage the strap mounting metal fittings on both right and left sides of the control panel ❶ from the two clicks ❷ .
2) Disengage the click ❸ and open the control panel ❶ with the printed circuit board in the direction shown by the arrow Ⓐ .
(You will hear a teating sound, but this causes no problem.)
3) Remove the insulator ❹ .

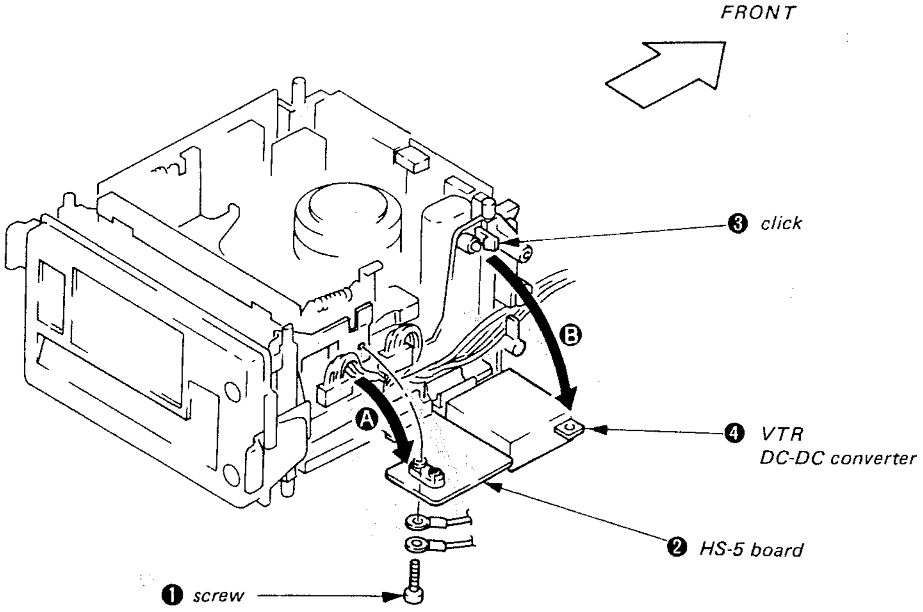

❹ insulator
❸ click
❷ click
❶ control panel
Ⓐ
❷ click

4) Disengage the click ❺ and remove the EP-2 board ❻ .
5) Remove the five screws ❼ and the control panel ❶ .
6) Remove the RECORD button ❽ and the EJECT knob ❾ and the S/L knob ❿ .


❼ screws
❾ EJECT knob
❽ RECORD button
❿ S/L knob
❻ EP-2 board
❺ click
❶ control panel

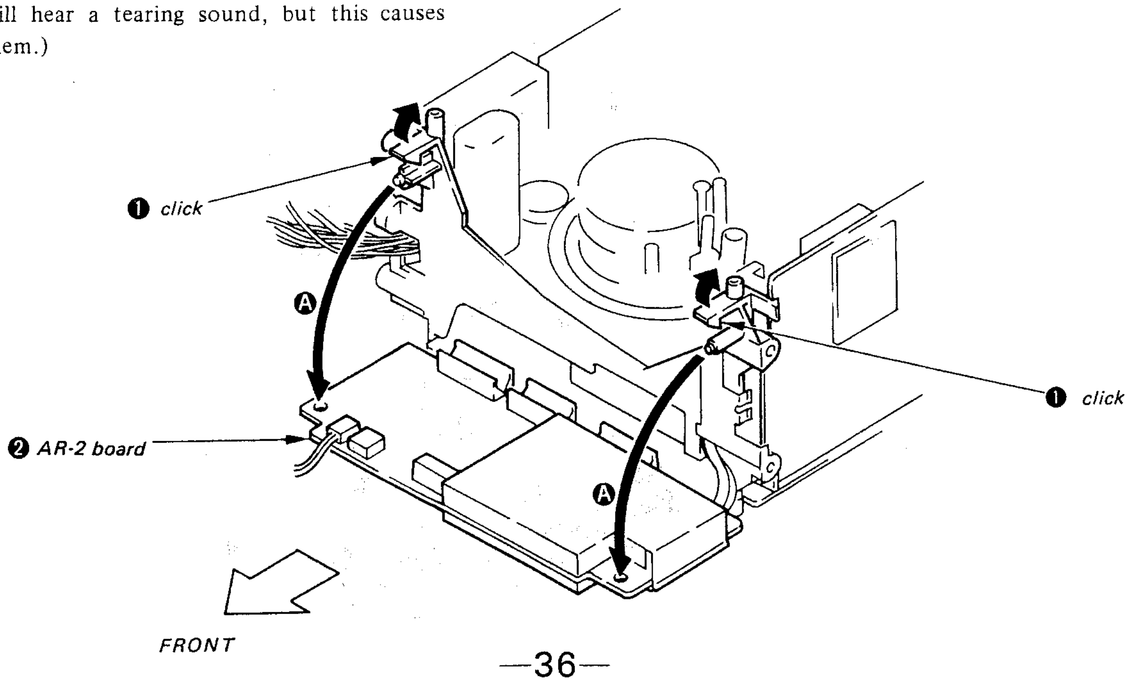
## 2-7. OPENING OF THE HS-5 BOARD AND THE DC-DC CONVERTER (VTR)

1) Remove the screw ❶ .
2) Open the HS-5 board ❷ in the direction shown by the arrow Ⓐ .
   (You will hear a tearing sound, but this causes no problem.)
3) Disengage the click ❸ and open the DC/DC converter ❹ in the direction shown by the arrow Ⓑ .
   (You will hear a tearing sound, but this causes no problem.)


FRONT
❸ click
Ⓑ
Ⓐ
❹ VTR DC-DC converter
❷ HS-5 board
❶ screw

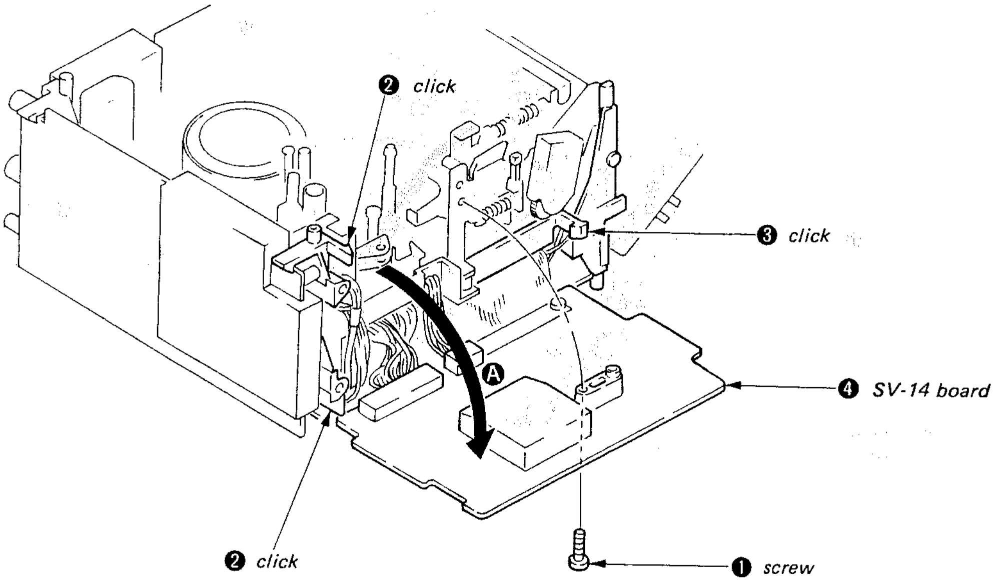
## 2-8. OPENING OF THE AR-2 BOARD

1) Disengage the two clicks ❶ from the AR-2 board ❷ .
2) Open the AR-2 board in the direction shown by the arrow Ⓐ .
   (You will hear a tearing sound, but this causes no problem.)


❶ click
Ⓐ
❷ AR-2 board
Ⓐ
❶ click
FRONT

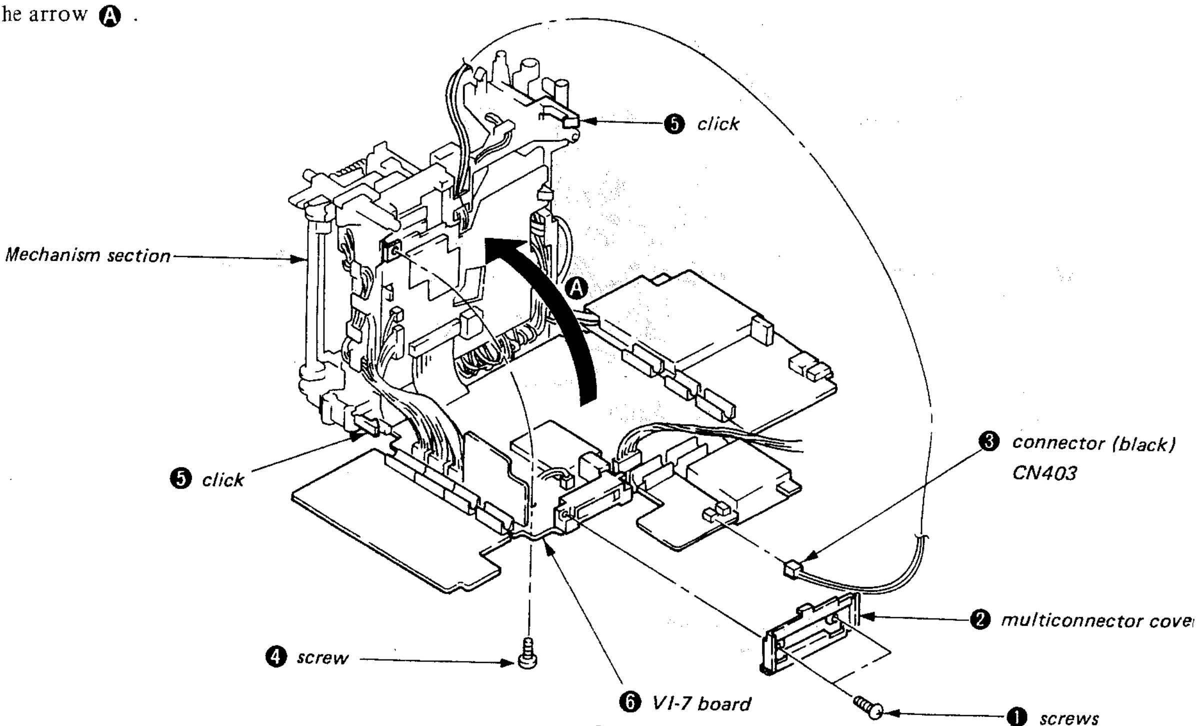
## 2-9. OPENING OF THE SV-14 BOARD

1) Remove the screw ❶ .
2) Disengage the two clicks ❷ .
3) Disengage the click ❸ and open the SV-14 board ❹ in the direction shown by the arrow Ⓐ .


❷ click
❸ click
Ⓐ
❹ SV-14 board
❷ click
❶ screw

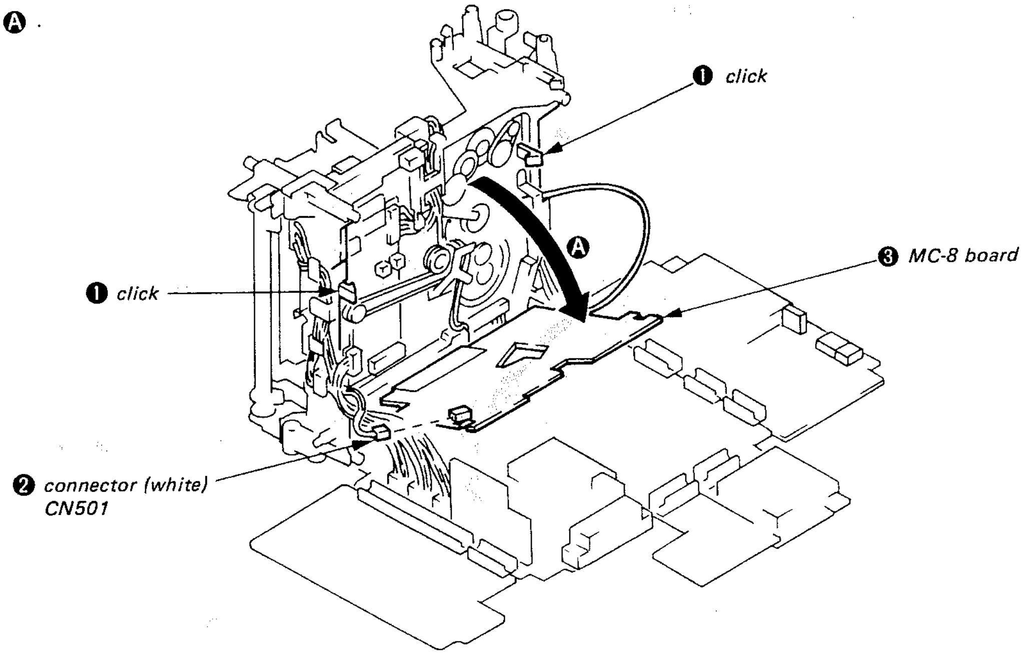
## 2-10. OPENING OF THE VI-7 BOARD

1) Remove the two screws ❶ and the multiconnector cover ❷.
2) Disconnect the connector CN403 (black) ❸ .
3) Remove the screw ❹ .
4) Disengage the two clicks ❺ from the VI-7 board ❻.
5) Open the VI-7 board ❻ in the direction shown by the arrow Ⓐ .


❺ click
Mechanism section
Ⓐ
❺ click
❸ connector (black) CN403
❷ multiconnector cove
❹ screw
❻ VI-7 board
❶ screws

## 2-11. REMOVAL OF THE MC-8 BOARD

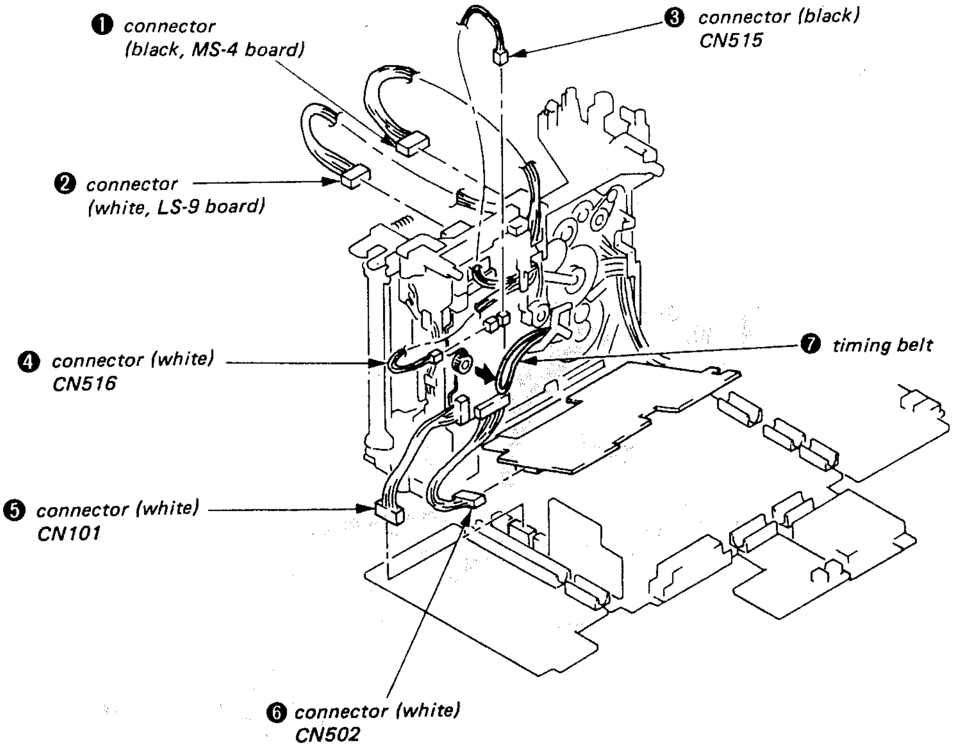
1) Disengage the two clicks ❶ .
2) Disconnect the connector CN501 (white) ❷ .
3) Remove the MC-8 board ❸ in the direction shown by the arrow Ⓐ .


❶ click
Ⓐ
❸ MC-8 board
❶ click
❷ connector (white) CN501

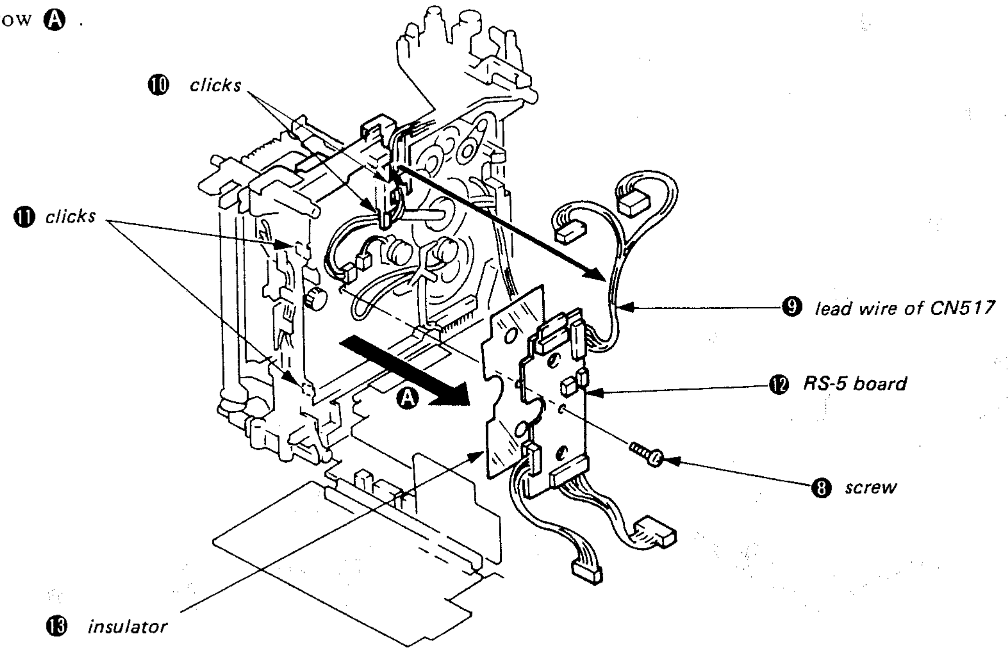
## 2-12. REMOVAL OF THE RS-5 BOARD

1) Disconnect the connectors ❶ to ❻ .
2) Remove the timing belt ❼ from the pulley.

To next page


❶ connector (black, MS-4 board)
❸ connector (black) CN515
❷ connector (white, LS-9 board)
❹ connector (white) CN516
❼ timing belt
❺ connector (white) CN101
❻ connector (white) CN502

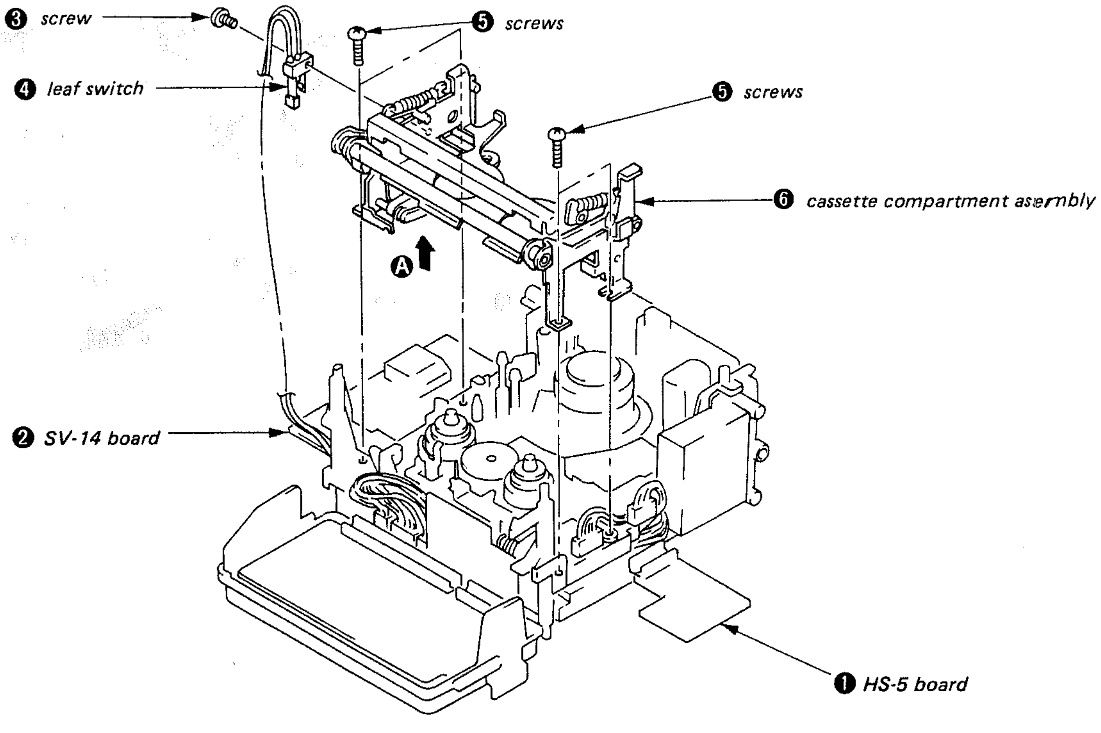
3) Remove the screw ❽ .
4) Release the lead wire of CN517 ❾ from the two clicks ❿ .
5) Disengage the two clicks ⓫ and remove the RS-5 board ⓬ and the insulator ⓭ in the direction shown by the arrow Ⓐ .



❿ clicks
⓫ clicks
❾ lead wire of CN517
⓬ RS-5 board
❽ screw
Ⓐ
⓭ insulator

## 2-13. REMOVAL OF THE CASSETTE COMPARTMENT ASSEMBLY

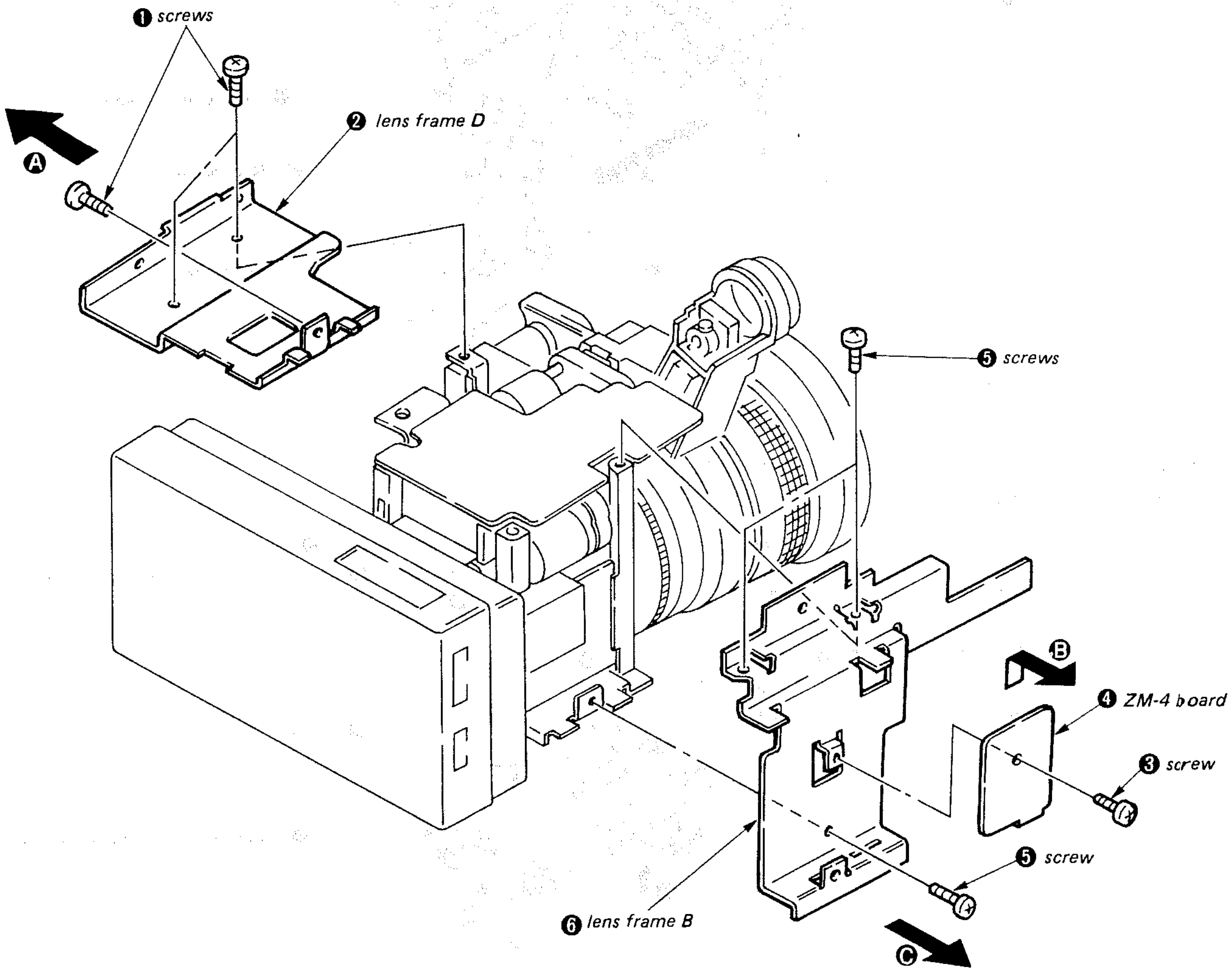
1) Perform the opening of the HS-5 board ❶ and the SV-14 board ❷ in advance.
2) Remove the screw ❸ and the leaf switch ❹ .
3) Remove four screws ❺ and the cassette compartment assembly ❻ in the direction shown by the arrow Ⓐ .



❸ screw
❺ screws
❹ leaf switch
❺ screws
❻ cassette compartment assembly
Ⓐ
❷ SV-14 board
❶ HS-5 board

## 2-14. REMOVAL OF THE LENS FRAME B AND LENS FRAME D

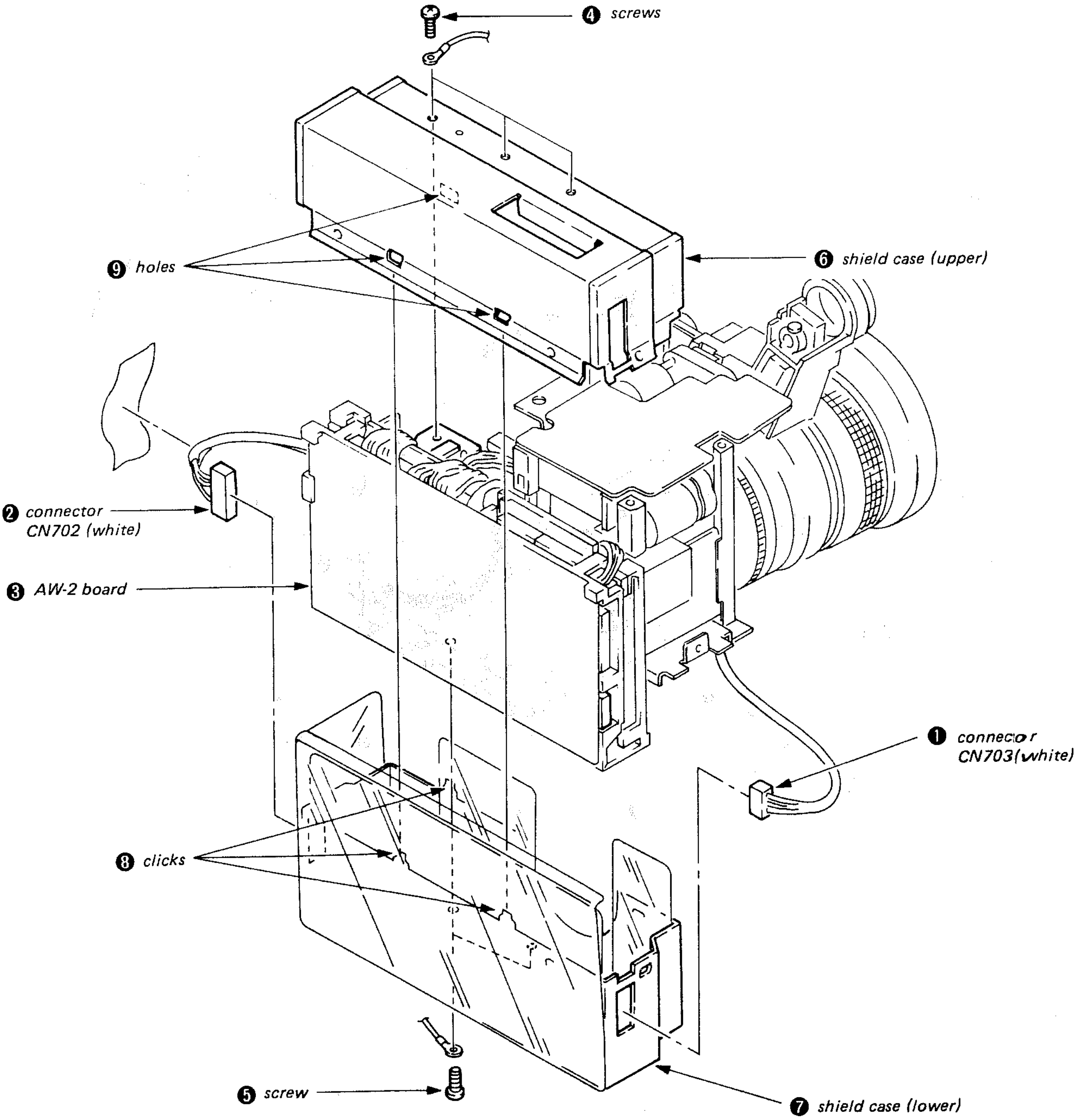
1) Remove the three screws ❶ and remove the lens frame D ❷ in the direction shown by the arrow Ⓐ.
2) Remove the screw ❸ and remove the ZM-4 board ❹ in the direction shown by the arrow Ⓑ.
3) Remove the three screws ❺ and remove the lens frame B ❻ in the direction shown by the arrow Ⓒ.


❶ screws
Ⓐ
❷ lens frame D
❺ screws
Ⓑ
❹ ZM-4 board
❸ screw
❺ screw
❻ lens frame B
Ⓒ

## 2-15. REMOVAL OF THE (UPPER AND LOWER) SHIELD CASES

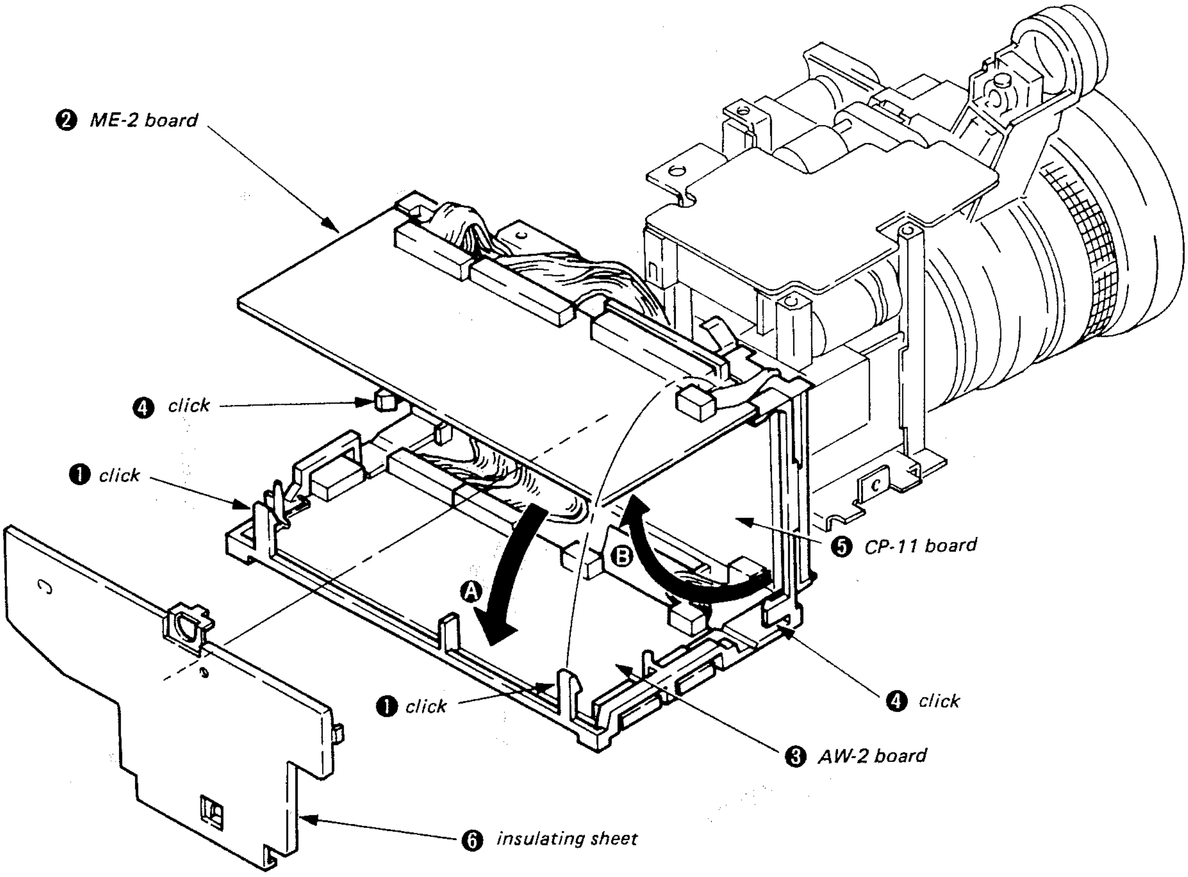
1) Disconnect the white connectors CN703 (white) ❶ and CN702 (white) ❷ from the AW-2 board ❸.
2) Remove the three screws ❹ and two screws ❺.
3) Separate the shield case into the upper part ❻ and the lower part ❼.

* When remounting the (upper and lower) shield case, put the clicks ❽ into the holes ❾.

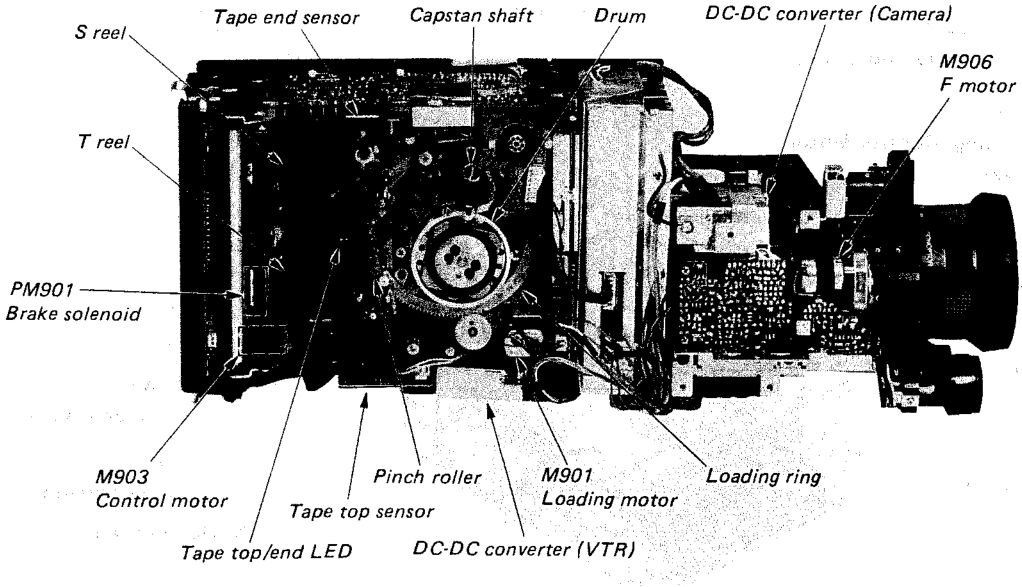

❹ screws
❾ holes
❻ shield case (upper)
❷ connector CN702 (white)
❸ AW-2 board
❶ connector CN703(white)
❽ clicks
❺ screw
❼ shield case (lower)

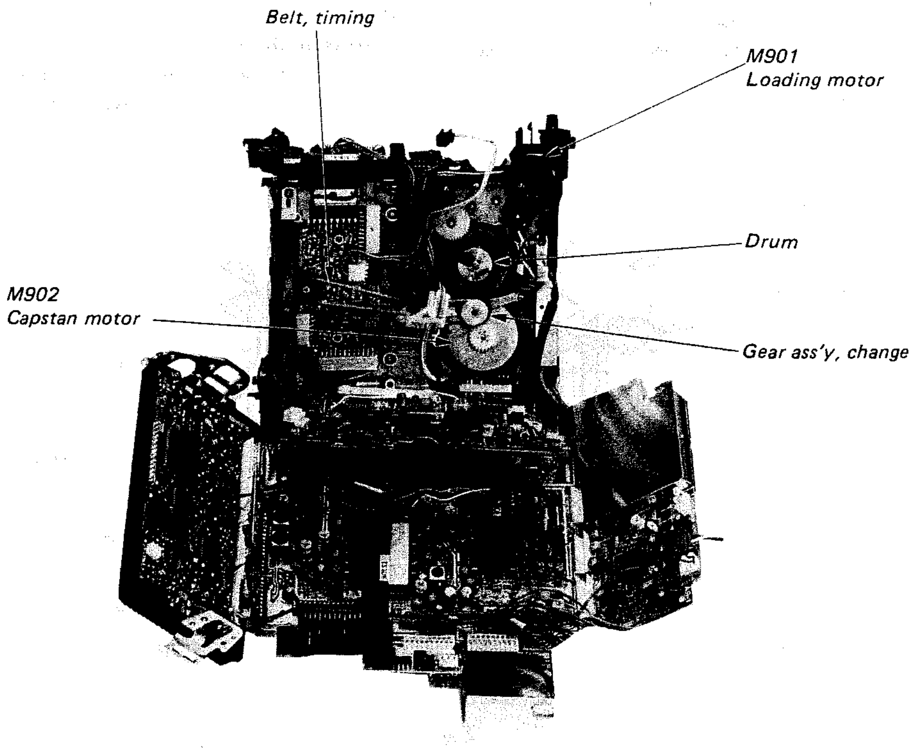
## 2-16. OPENING OF THE AW-2 AND THE ME-2 BOARDS

1) Disengage the two clicks ❶ from the ME-2 board ❷.
2) Open the AW-2 board ❸ in the direction shown by the arrow Ⓐ.
3) Disengage the two clicks ❹ from the ME-2 board ❷.
4) Lift the ME-2 board ❷ in the direction shown by the arrow Ⓑ.
5) Remove the insulating sheet ❻ from the CP-11 board ❺.


❷ ME-2 board
❹ click
❶ click
Ⓐ
Ⓑ
❺ CP-11 board
❶ click
❹ click
❸ AW-2 board
❻ insulating sheet

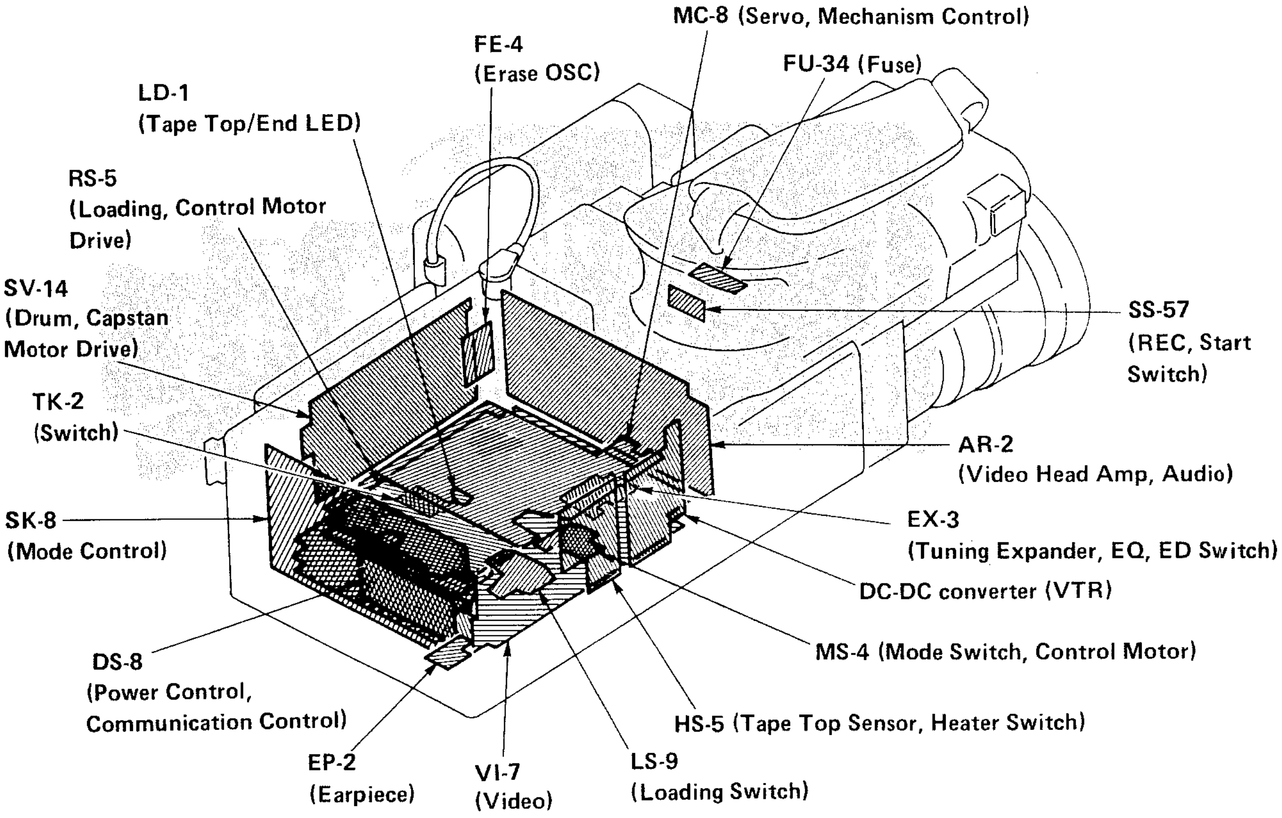
## 2-17. INTERNAL VIEW

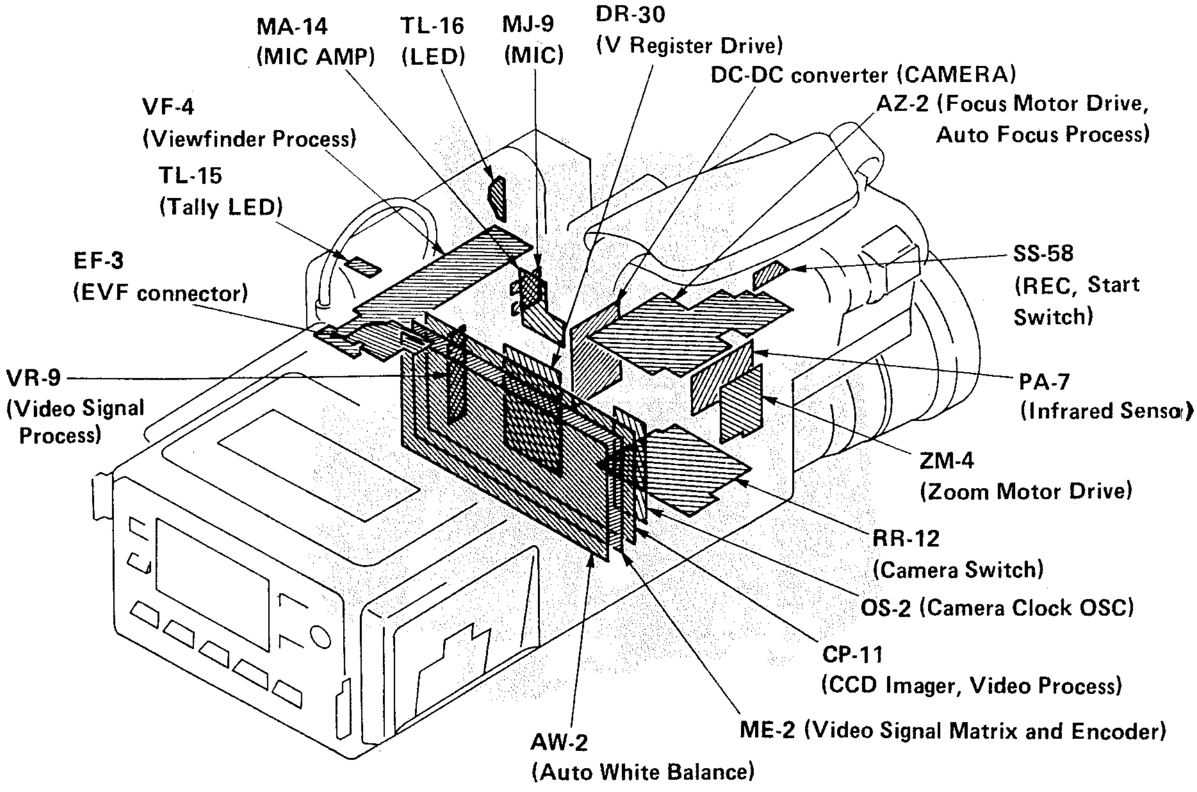

S reel
Tape end sensor
Capstan shaft
Drum
DC-DC converter (Camera)
M906
F motor
T reel
PM901
Brake solenoid
M903
Control motor
Pinch roller
M901
Loading motor
Loading ring
Tape top sensor
Tape top/end LED
DC-DC converter (VTR)


Belt, timing
M901
Loading motor
Drum
M902
Capstan motor
Gear ass'y, change

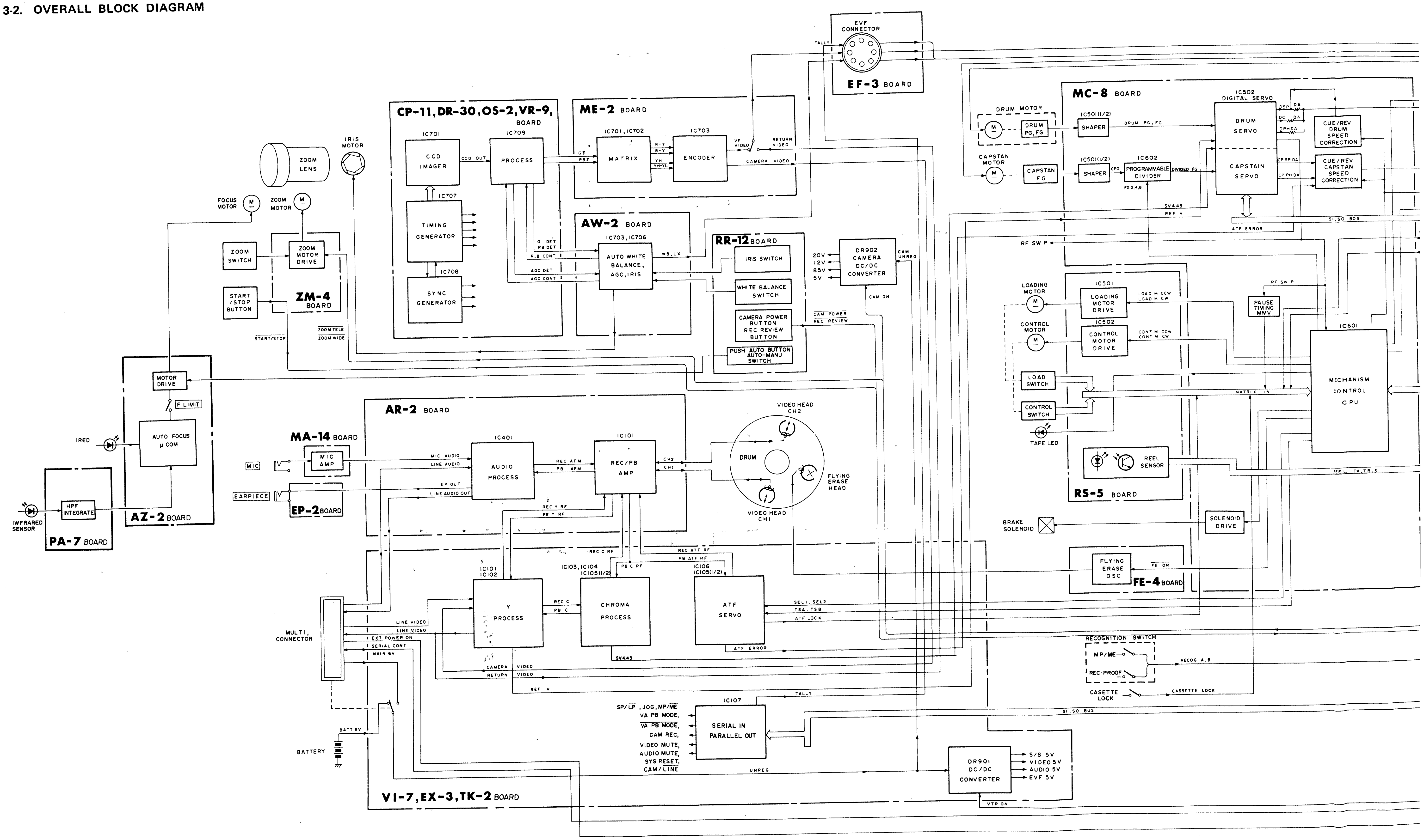
# SECTION 3
# DIAGRAMS

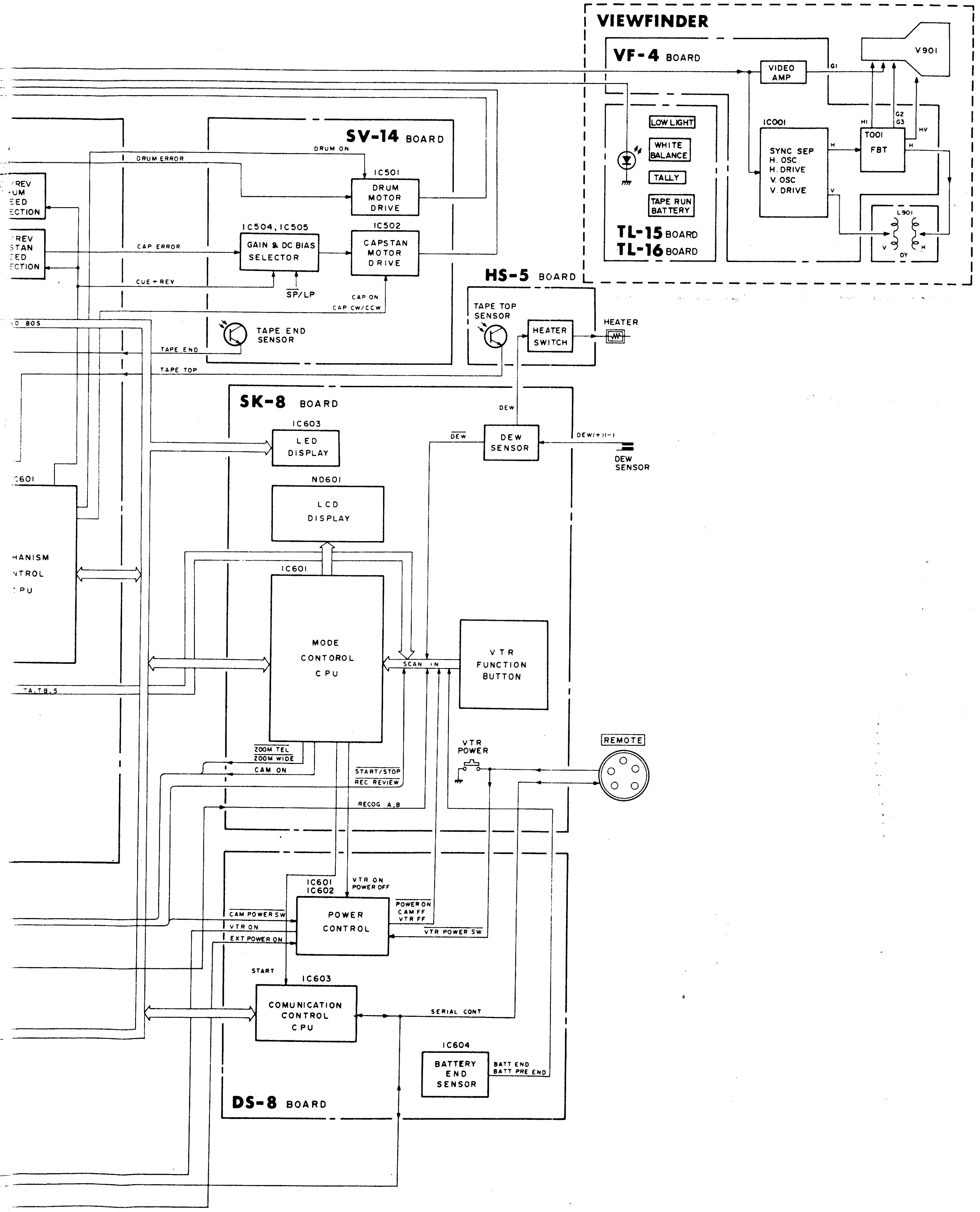
## 3-1. CIRCUIT BOARDS LOCATION


MC-8 (Servo, Mechanism Control)
FE-4
(Erase OSC)
FU-34 (Fuse)
LD-1
(Tape Top/End LED)
RS-5
(Loading, Control Motor
Drive)
SV-14
(Drum, Capstan
Motor Drive)
SS-57
(REC, Start
Switch)
TK-2
(Switch)
AR-2
(Video Head Amp, Audio)
EX-3
(Tuning Expander, EQ, ED Switch)
SK-8
(Mode Control)
DC-DC converter (VTR)
MS-4 (Mode Switch, Control Motor)
DS-8
(Power Control,
Communication Control)
HS-5 (Tape Top Sensor, Heater Switch)
EP-2
(Earpiece)
VI-7
(Video)
LS-9
(Loading Switch)

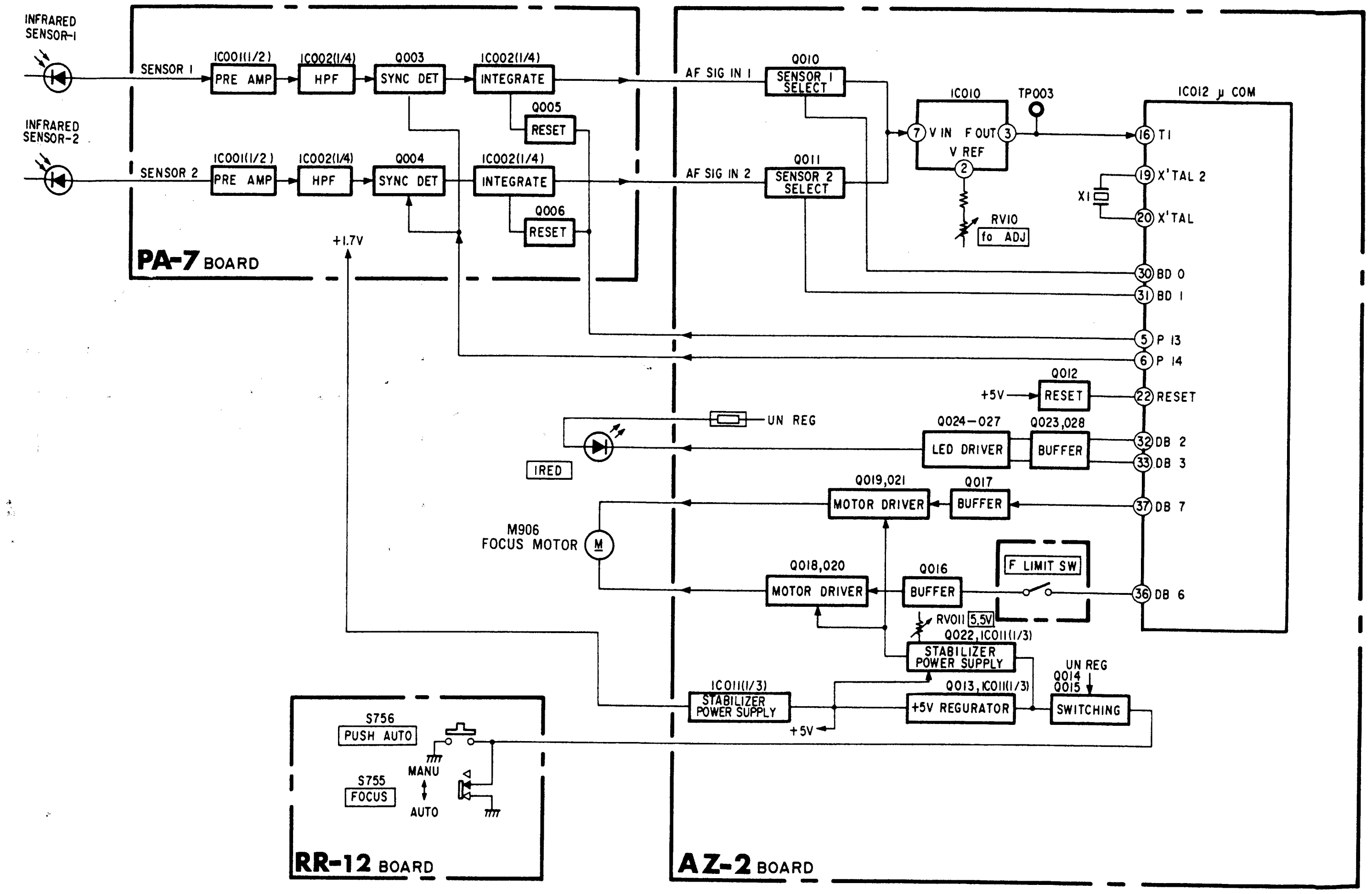

MA-14
(MIC AMP)
TL-16
(LED)
MJ-9
(MIC)
DR-30
(V Register Drive)
DC-DC converter (CAMERA)
AZ-2 (Focus Motor Drive,
Auto Focus Process)
VF-4
(Viewfinder Process)
TL-15
(Tally LED)
EF-3
(EVF connector)
SS-58
(REC, Start
Switch)
VR-9
(Video Signal
Process)
PA-7
(Infrared Sensor)
ZM-4
(Zoom Motor Drive)
RR-12
(Camera Switch)
OS-2 (Camera Clock OSC)
CP-11
(CCD Imager, Video Process)
ME-2 (Video Signal Matrix and Encoder)
AW-2
(Auto White Balance)

## 3-2. OVERALL BLOCK DIAGRAM

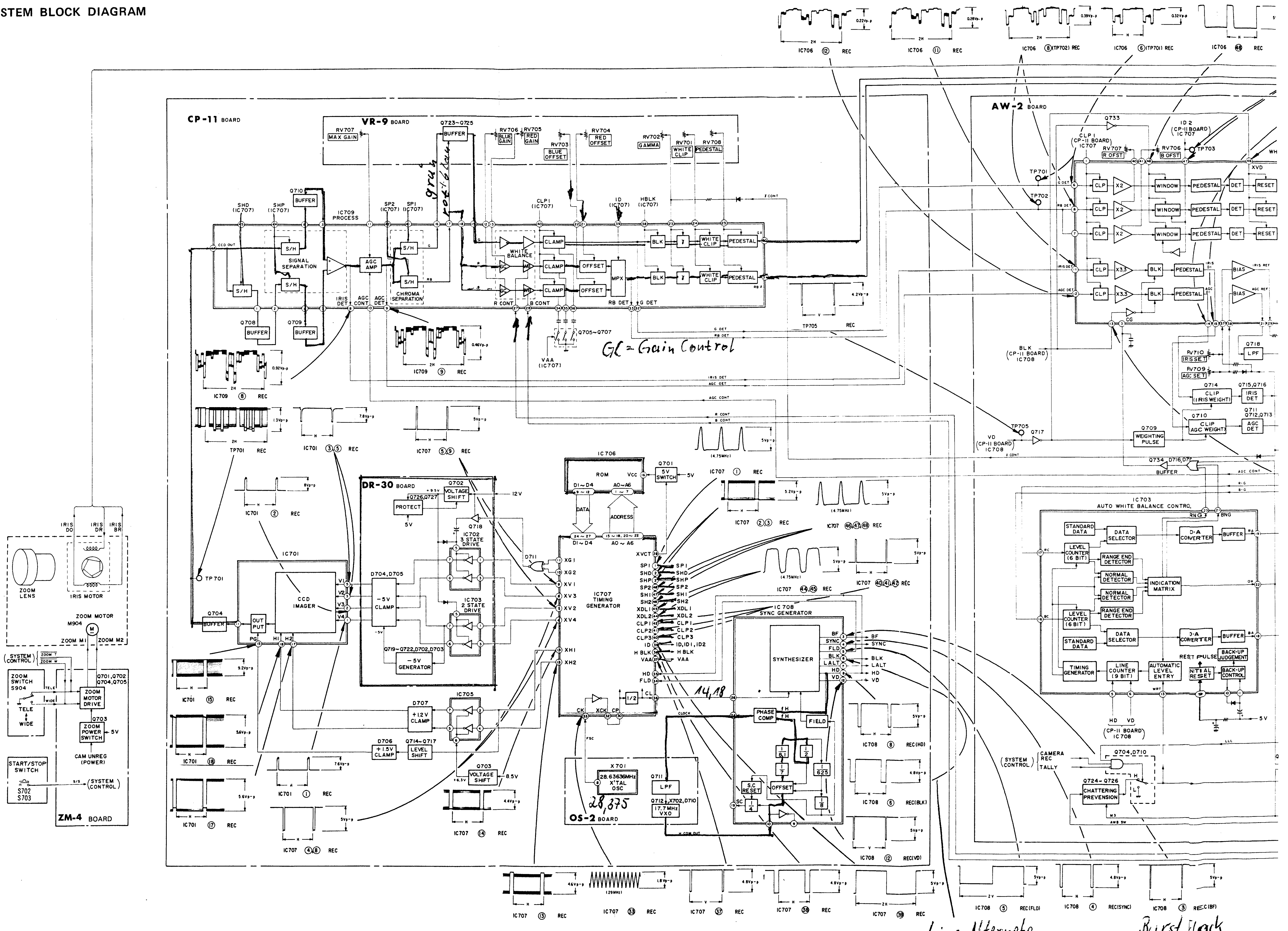

EVF CONNECTOR
TALLY
EF-3 BOARD
CP-11, DR-30, OS-2, VR-9, BOARD
IC701
CCD IMAGER
CCD OUT
IC709
PROCESS
IC707
TIMING GENERATOR
IC708
SYNC GENERATOR
G DET
RB DET
R,B CONT
AGC DET
AGC CONT
ME-2 BOARD
IC701, IC702
MATRIX
R-Y
B-Y
YH
YH-YL
IC703
ENCODER
VF VIDEO
RETURN VIDEO
CAMERA VIDEO
AW-2 BOARD
IC703, IC706
AUTO WHITE BALANCE, AGC, IRIS
WB, LX
RR-12 BOARD
IRIS SWITCH
WHITE BALANCE SWITCH
CAMERA POWER BUTTON
REC REVIEW BUTTON
PUSH AUTO BUTTON AUTO-MANU SWITCH
DR902 CAMERA DC/DC CONVERTER
20V
12V
8.5V
5V
CAM UNREG
CAM ON
CAM POWER
REC REVIEW
ZOOM LENS
IRIS MOTOR
FOCUS MOTOR
ZOOM MOTOR
ZOOM SWITCH
ZOOM MOTOR DRIVE
START /STOP BUTTON
ZM-4 BOARD
START/STOP
ZOOM TELE
ZOOM WIDE
MOTOR DRIVE
F LIMIT
AUTO FOCUS μ COM
IRED
AZ-2 BOARD
HPF INTEGRATE
IWFRARED SENSOR
PA-7 BOARD
AR-2 BOARD
MA-14 BOARD
MIC AMP
MIC
EARPIECE
EP-2 BOARD
MIC AUDIO
LINE AUDIO
EP OUT
LINE AUDIO OUT
IC401
AUDIO PROCESS
REC AFM
PB AFM
IC101
REC/PB AMP
CH2
CH1
REC Y RF
PB Y RF
VIDEO HEAD CH2
DRUM
VIDEO HEAD CH1
FLYING ERASE HEAD
REC C RF
PB C RF
REC ATF RF
PB ATF RF
IC101 IC102
Y PROCESS
IC103, IC104 IC105(1/2)
CHROMA PROCESS
REC C
PB C
IC106 IC105(1/2)
ATF SERVO
SEL1, SEL2
TSA, TSB
ATF LOCK
ATF ERROR
SV443
MULTI CONNECTOR
LINE VIDEO
LINE VIDEO
EXT POWER ON
SERIAL CONT
MAIN 6V
CAMERA VIDEO
RETURN VIDEO
REF V
TALLY
BATT 6V
BATTERY
IC107
SERIAL IN PARALLEL OUT
SP/LP, JOG, MP/ME
VA PB MODE,
VA PB MODE,
CAM REC,
VIDEO MUTE,
AUDIO MUTE,
SYS RESET,
CAM/LINE
UNREG
DR901 DC/DC CONVERTER
S/S 5V
VIDEO 5V
AUDIO 5V
EVF 5V
VTR ON
VI-7, EX-3, TK-2 BOARD
MC-8 BOARD
DRUM MOTOR
DRUM PG, FG
IC501(1/2)
SHAPER
DRUM PG, FG
CAPSTAN MOTOR
CAPSTAN FG
IC501(1/2)
SHAPER
CFG
IC602
PROGRAMMABLE DIVIDER
DIVIDED FG
FG 2,4,8
IC502 DIGITAL SERVO
DRUM SERVO
CAPSTAN SERVO
DSP DA
DC DA
DPH DA
CP SP DA
CP PH DA
CUE/REV DRUM SPEED CORRECTION
CUE/REV CAPSTAN SPEED CORRECTION
SV443
REF V
ATF ERROR
SI, SO BUS
RF SW P
RF SW P
LOADING MOTOR
IC501
LOADING MOTOR DRIVE
LOAD M CCW
LOAD M CW
CONTROL MOTOR
IC502
CONTROL MOTOR DRIVE
CONT M CCW
CONT M CW
PAUSE TIMING MMV
IC601
MECHANISM CONTROL CPU
LOAD SWITCH
CONTROL SWITCH
MATRIX IN
TAPE LED
REEL SENSOR
REEL TA, TB, S
RS-5 BOARD
BRAKE SOLENOID
SOLENOID DRIVE
FLYING ERASE OSC
FE ON
FE-4 BOARD
RECOGNITION SWITCH
MP/ME
REC PROOF
RECOG A, B
CASETTE LOCK
CASSETTE LOCK
SI, SO BUS


VIEWFINDER
VF-4 BOARD
VIDEO AMP
G1
V901
IC001
SYNC SEP
H. OSC
H. DRIVE
V. OSC
V. DRIVE
H
V
T001
FBT
H1
G2
G3
HV
H
L901
V
DY
H
LOW LIGHT
WHITE BALANCE
TALLY
TAPE RUN BATTERY
TL-15 BOARD
TL-16 BOARD
SV-14 BOARD
DRUM ON
DRUM ERROR
IC501
DRUM MOTOR DRIVE
IC504, IC505
GAIN & DC BIAS SELECTOR
IC502
CAPSTAN MOTOR DRIVE
CAP ERROR
CUE + REV
SP/LP
CAP ON
CAP CW/CCW
TAPE END SENSOR
TAPE END
TAPE TOP
HS-5 BOARD
TAPE TOP SENSOR
HEATER SWITCH
HEATER
SK-8 BOARD
IC603
LED DISPLAY
DEW
DEW
DEW SENSOR
DEW(+)(−)
DEW SENSOR
ND601
LCD DISPLAY
IC601
MODE CONTOROL CPU
SCAN IN
VTR FUNCTION BUTTON
ZOOM TEL
ZOOM WIDE
CAM ON
START/STOP
REC REVIEW
RECOG A,B
VTR POWER
REMOTE
IC601
IC602
VTR ON
POWER OFF
POWER CONTROL
CAM POWER SW
VTR ON
EXT POWER ON
POWER ON
CAM FF
VTR FF
VTR POWER SW
START
IC603
COMUNICATION CONTROL CPU
SERIAL CONT
IC604
BATTERY END SENSOR
BATT END
BATT PRE END
DS-8 BOARD

## 3-3. AUTO FOCUS BLOCK DIAGRAM


INFRARED SENSOR-1
INFRARED SENSOR-2
SENSOR 1
SENSOR 2
IC001(1/2)
PRE AMP
IC002(1/4)
HPF
Q003
SYNC DET
IC002(1/4)
INTEGRATE
Q005
RESET
IC001(1/2)
PRE AMP
IC002(1/4)
HPF
Q004
SYNC DET
IC002(1/4)
INTEGRATE
Q006
RESET
+1.7V
PA-7 BOARD
AF SIG IN 1
Q010
SENSOR 1 SELECT
AF SIG IN 2
Q011
SENSOR 2 SELECT
IC010
7 V IN
F OUT 3
V REF
2
RV10
fo ADJ
TP003
IC012 μ COM
16 T1
19 X'TAL 2
X1
20 X'TAL
30 BD 0
31 BD 1
5 P 13
6 P 14
+5V
Q012
RESET
22 RESET
UN REG
IRED
Q024−027
LED DRIVER
Q023,028
BUFFER
32 DB 2
33 DB 3
M906
FOCUS MOTOR
M
Q019,021
MOTOR DRIVER
Q017
BUFFER
37 DB 7
Q018,020
MOTOR DRIVER
Q016
BUFFER
F LIMIT SW
36 DB 6
RV011 5.5V
Q022, IC011(1/3)
STABILIZER POWER SUPPLY
IC011(1/3)
STABILIZER POWER SUPPLY
+5V
Q013, IC011(1/3)
+5V REGURATOR
UN REG
Q014
Q015
SWITCHING
S756
PUSH AUTO
MANU
S755
FOCUS
AUTO
RR-12 BOARD
AZ-2 BOARD

## 3-4. CAMERA SYSTEM BLOCK DIAGRAM


IC706 ⑫ REC
IC706 ⑪ REC
IC706 ⑧(TP702) REC
IC706 ⑥(TP701) REC
2H
H
0.22Vp-p
0.26Vp-p
0.39Vp-p
0.32Vp-p
CP-11 BOARD
VR-9 BOARD
RV707 MAX GAIN
Q723~Q725 BUFFER
RV706 BLUE GAIN
RV705 RED GAIN
RV703 BLUE OFFSET
RV704 RED OFFSET
RV702 GAMMA
RV701 WHITE CLIP
RV708 PEDESTAL
Q710 BUFFER
SHD (IC707)
SHP (IC707)
IC709 PROCESS
SP2 (IC707)
SP1 (IC707)
CLP1 (IC707)
ID (IC707)
HBLK (IC707)
CCD OUT
S/H
SIGNAL SEPARATION
AGC AMP
CHROMA SEPARATION
WHITE BALANCE
GC
WB
CLAMP
OFFSET
MPX
BLK
γ
WHITE CLIP
PEDESTAL
IRIS DET
AGC CONT
AGC DET
R CONT
B CONT
RB DET
G DET
Q708 BUFFER
Q709 BUFFER
Q705~Q707
VAA (IC707)
IC709 ⑧ REC
0.92Vp-p
IC709 ⑨ REC
0.46Vp-p
TP705 REC
4.2Vp-p
TP701 REC
1.3Vp-p
IC701 ③⑤ REC
7.8Vp-p
IC707 ⑤⑨ REC
5Vp-p
IC701 ② REC
8Vp-p
ZM-4 BOARD
IRIS DG
IRIS DR
IRIS BR
ZOOM LENS
IRIS MOTOR
ZOOM MOTOR M904
ZOOM M1
ZOOM M2
SYSTEM CONTROL
ZOOM T
ZOOM W
ZOOM SWITCH S904
TELE
WIDE
Q701,Q702 Q704,Q705
ZOOM MOTOR DRIVE
Q703 ZOOM POWER SWITCH
5V
CAM UNREG (POWER)
START/STOP SWITCH
S702 S703
TP701
IC701
CCD IMAGER
Q704 BUFFER
OUT PUT
PG
H1
H2
V1
V2
V3
V4
DR-30 BOARD
Q726,Q727 PROTECT
Q702 VOLTAGE SHIFT
Q718
IC702 3 STATE DRIVE
IC703 2 STATE DRIVE
D704,D705
-5V CLAMP
Q719~Q722,D702,D703
-5V GENERATOR
D707 +12V CLAMP
IC705
D706 +1.5V CLAMP
Q714~Q717 LEVEL SHIFT
Q703 VOLTAGE SHIFT
12V
8.5V
+6.3V
IC701 ⑮ REC
9.2Vp-p
IC701 ⑱ REC
5.6Vp-p
IC701 ⑰ REC
5.6Vp-p
IC701 ① REC
7.6Vp-p
IC707 ④⑧ REC
5Vp-p
IC707 ⑭ REC
4.4Vp-p
IC706
ROM
Vcc
D1~D4
A0~A6
DATA
ADDRESS
Q701 5V SWITCH
D711
XG1
XG2
XV1
XV3
XV2
XV4
XH1
XH2
IC707 TIMING GENERATOR
XVCT
SP1
SHD
SHP
SP2
SH1
SH2
XDL1
XDL2
CLP1
CLP2
CLP3
ID
H BLK
VAA
HD
FLD
ID,ID1,ID2
CK
XCK
CP
CL
1/2
FSC
X701 28.63636MHz X'TAL OSC
Q711 LPF
Q712, X702, D710 17.7MHz VXO
OS-2 BOARD
IC707 ① REC
IC707 ②③ REC
IC707 ㊻㊼㊽ REC
IC707 ㊹㊺ REC
IC707 ㊵㊶㊷ REC
(14.75MHz)
IC708 SYNC GENERATOR
SYNTHESIZER
BF
SYNC
FLD
BLK
LALT
HD
VD
PHASE COMP
FIELD
S.C RESET
OFFSET
SC
1/4
1/7
1/625
1/8
1/2
CLOCK
H COM OUT
IC708 ⑧ REC(HD)
IC708 ⑥ REC(BLK)
IC708 ⑫ REC(VD)
IC707 ⑬ REC
IC707 ㉝ REC
IC707 ㊲ REC
IC707 ㊳ REC
IC707 ㊴ REC
(29MHz)
IC708 ⑤ REC(FLD)
IC708 ④ REC(SYNC)
IC708 ③ REC(BF)
AW-2 BOARD
Q733
CLP1 (CP-11 BOARD) IC707
RV707 R OFST
ID2 (CP-11 BOARD) IC707
RV706 B OFST
TP703
TP701
TP702
CLP
X2
X3.3
WINDOW
PEDESTAL
DET
RESET
BIAS
CG
BLK (CP-11 BOARD) IC708
VD (CP-11 BOARD) IC708
TP705
Q717
Q709 WEIGHTING PULSE
Q734, D716, D717 BUFFER
RV710 IRIS SET
RV709 AGC SET
Q714 CLIP (IRIS WEIGHT)
Q715,Q716 IRIS DET
Q710 CLIP (AGC WEIGHT)
Q711 Q712,Q713 AGC DET
Q718 LPF
IC703 AUTO WHITE BALANCE CONTROL
STANDARD DATA
DATA SELECTOR
LEVEL COUNTER (6 BIT)
RANGE END DETECTOR
NORMAL DETECTOR
INDICATION MATRIX
D-A CONVERTER
BUFFER
TIMING GENERATOR
LINE COUNTER (9 BIT)
AUTOMATIC LEVEL ENTRY
INITIAL RESET
REST PULSE
BACK-UP JUDGEMENT
BACK-UP CONTROL
HD VD (CP-11 BOARD) IC708
(SYSTEM CONTROL)
CAMERA REC
TALLY
Q704,Q710
Q724~Q726 CHATTERING PREVENSION
AWB SW
5V

grau
rot/blau

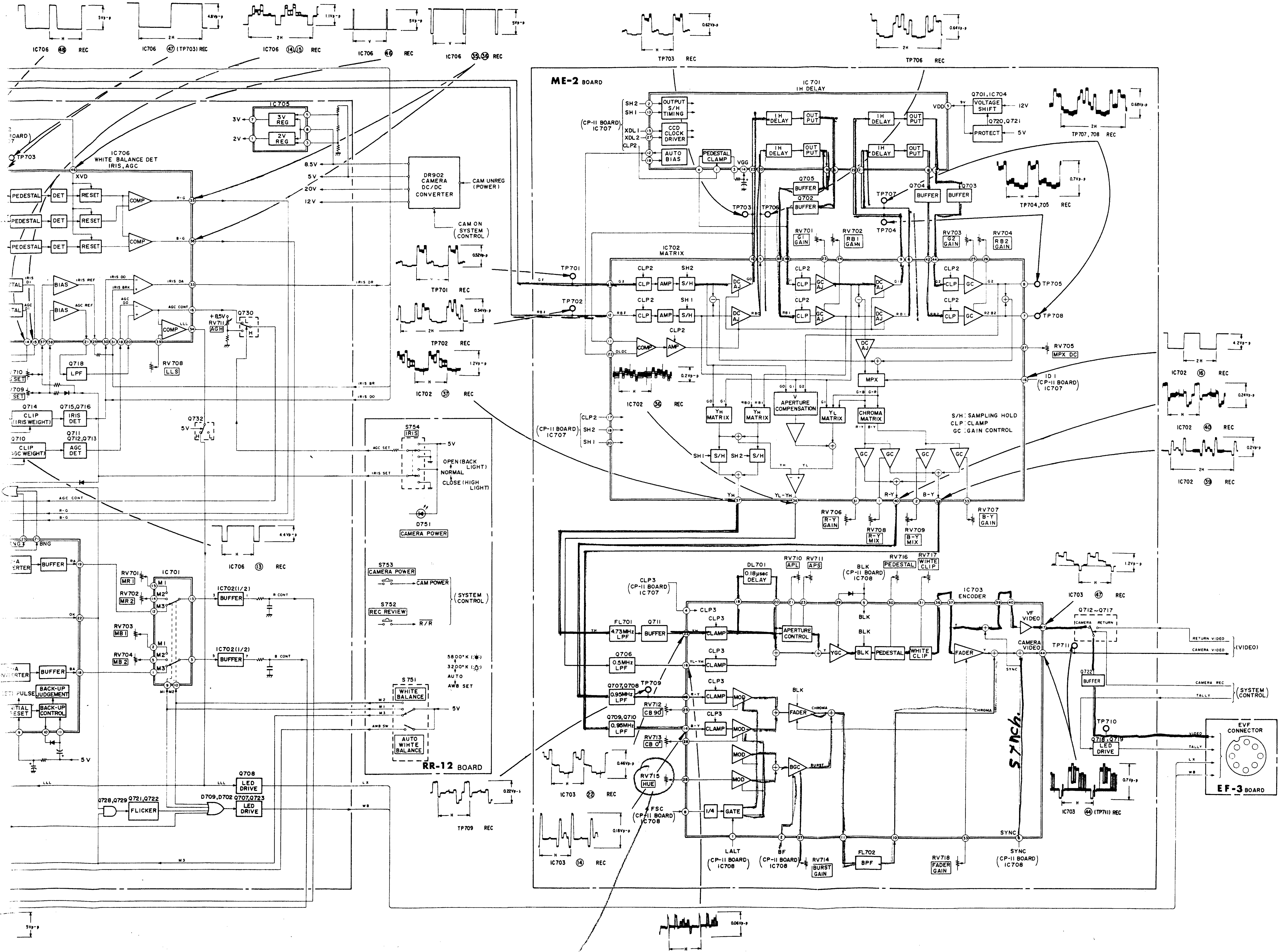
GC = Gain Control

14,18

28,375

Line Alternate

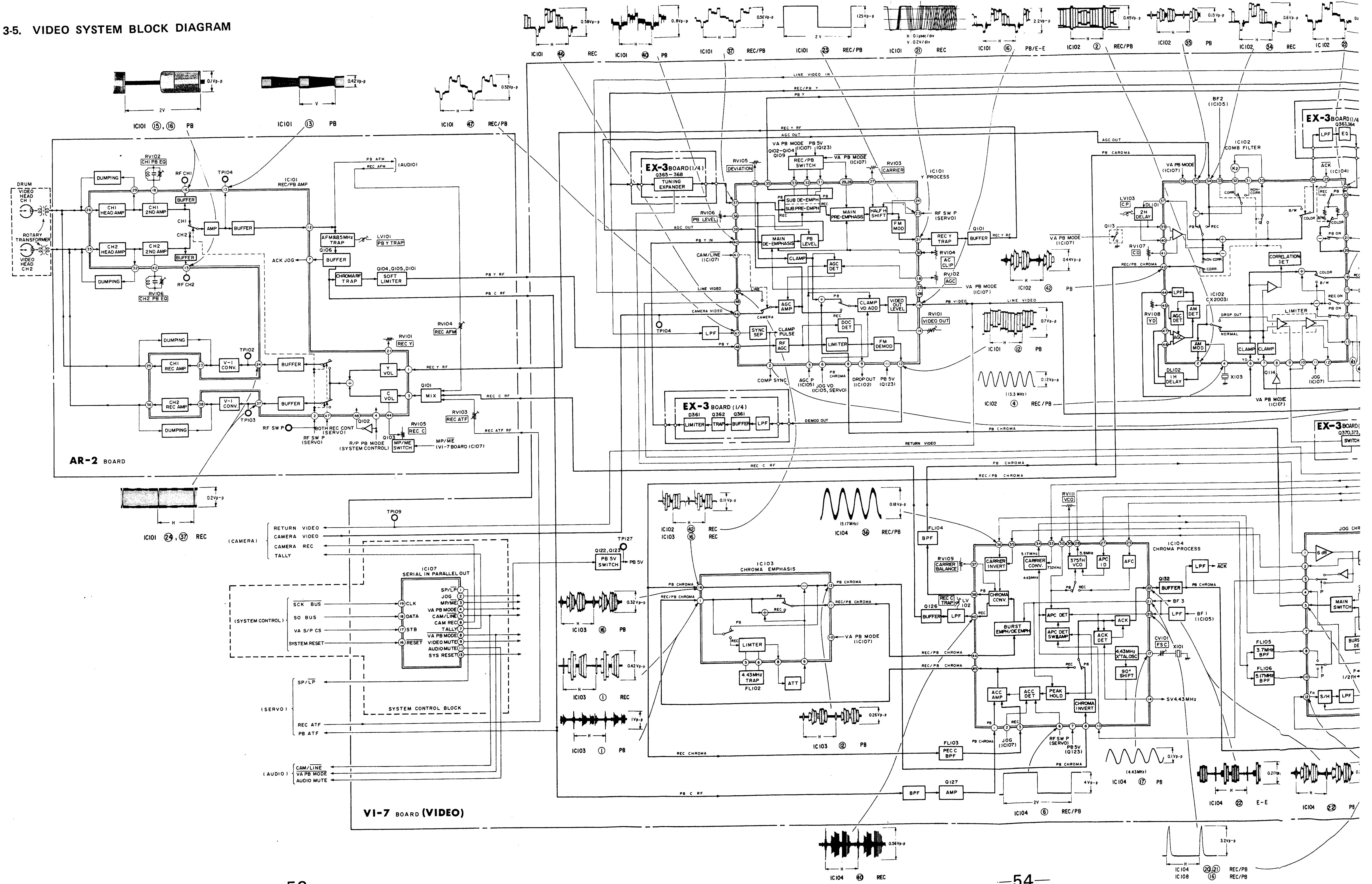
Burst Flack

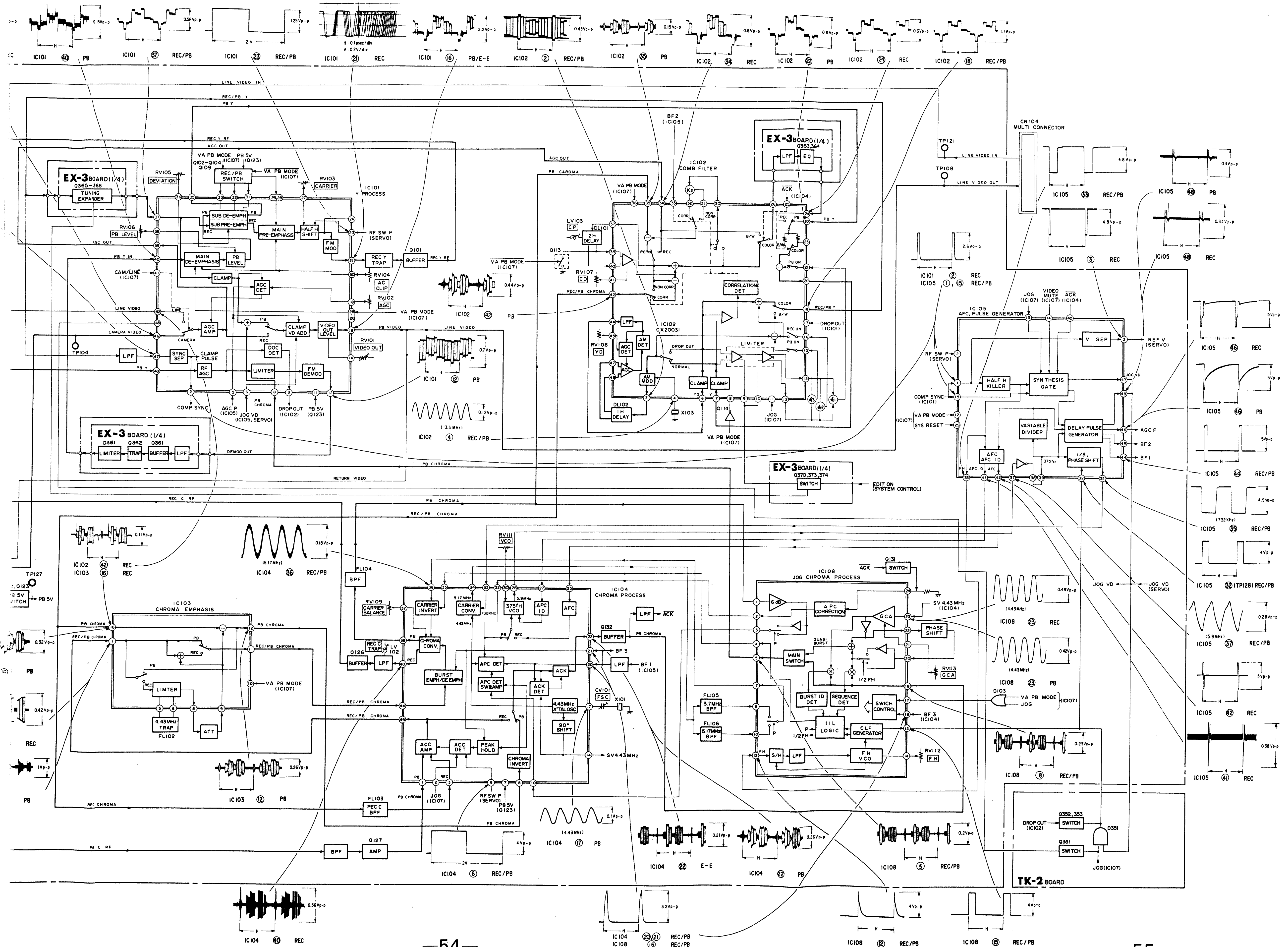

IC706 (48) REC
IC706 (47) (TP703) REC
IC706 (14),(15) REC
IC706 (49) REC
IC706 (35),(36) REC
TP703 REC
TP706 REC
IC705
3V REG
2V REG
IC706 WHITE BALANCE DET IRIS, AGC
TP703
XVD
PEDESTAL
DET
RESET
COMP
BIAS
Q718 LPF
RV708 LLS
Q714 CLIP (IRIS WEIGHT)
Q715,Q716 IRIS DET
Q710 CLIP (AGC WEIGHT)
Q711 Q712,Q713 AGC DET
Q730
+8.5V RV711 AGH
Q732
DR902 CAMERA DC/DC CONVERTER
CAM UNREG (POWER)
CAM ON (SYSTEM CONTROL)
8.5V
5V
20V
12V
TP701 REC
TP702 REC
IC702 (37) REC
IC702 (36) REC
S754 IRIS
OPEN (BACK LIGHT)
NORMAL
CLOSE (HIGH LIGHT)
D751 CAMERA POWER
S753 CAMERA POWER
CAM POWER
(SYSTEM CONTROL)
S752 REC REVIEW
R/R
5800°K
3200°K
AUTO
AWB SET
S751 WHITE BALANCE
AUTO WHITE BALANCE
RR-12 BOARD
IC706 (13) REC
BUFFER
RV701 MR1
RV702 MR2
RV703 MB1
RV704 MB2
IC701
IC702(1/2)
BACK-UP JUDGEMENT
BACK-UP CONTROL
Q708 LED DRIVE
Q728,Q729 Q721,Q722 FLICKER
D709,D702 Q707,Q723 LED DRIVE
TP709 REC
ME-2 BOARD
IC701 1H DELAY
OUTPUT S/H TIMING
CCD CLOCK DRIVER
AUTO BIAS
PEDESTAL CLAMP
(CP-11 BOARD) IC707
VGG
1H DELAY
OUT PUT
Q705 BUFFER
Q702 BUFFER
Q704 BUFFER
Q703 BUFFER
TP703
TP706
TP707
TP704
Q701, IC704 VOLTAGE SHIFT
Q720,Q721 PROTECT
TP707,708 REC
TP704,705 REC
RV701 G1 GAIN
RV702 RB1 GAIN
RV703 G2 GAIN
RV704 RB2 GAIN
IC702 MATRIX
CLP2
AMP
S/H
DC AJ
GC AJ
GC
TP701
TP702
TP705
TP708
RV705 MPX DC
MPX
ID1 (CP-11 BOARD) IC707
YH MATRIX
APERTURE COMPENSATION
YL MATRIX
CHROMA MATRIX
S/H: SAMPLING HOLD
CLP: CLAMP
GC: GAIN CONTROL
IC702 (16) REC
IC702 (40) REC
IC702 (39) REC
RV706 R-Y GAIN
RV708 R-Y MIX
RV709 B-Y MIX
RV707 B-Y GAIN
DL701 0.18µsec DELAY
RV710 APL
RV711 APS
BLK (CP-11 BOARD) IC708
RV716 PEDESTAL
RV717 WHITE CLIP
IC703 ENCODER
CLP3 (CP-11 BOARD) IC707
FL701 4.73MHz LPF
Q711 BUFFER
CLAMP
APERTURE CONTROL
YGC
BLK
PEDESTAL
WHITE CLIP
FADER
VF VIDEO
CAMERA VIDEO
Q706 0.5MHz LPF
Q707,Q708 0.95MHz LPF
Q709,Q710 0.95MHz LPF
RV712 CB 90°
RV713 CB 0°
RV715 HUE
MOD
BGC
CHROMA
BURST
1/4
GATE
FSC (CP-11 BOARD) IC708
LALT (CP-11 BOARD) IC708
BF (CP-11 BOARD) IC708
RV714 BURST GAIN
FL702 BPF
RV718 FADER GAIN
SYNC (CP-11 BOARD) IC708
Synch.
IC703 (47) REC
Q712~Q717
RETURN VIDEO
CAMERA VIDEO
(VIDEO)
TP711
Q722 BUFFER
CAMERA REC
TALLY
(SYSTEM CONTROL)
TP710
Q718,Q719 LED DRIVE
EVF CONNECTOR
EF-3 BOARD
IC703 (44) (TP711) REC
IC703 (22) REC
IC703 (14) REC
IC703 (16) REC

Burst-Phase

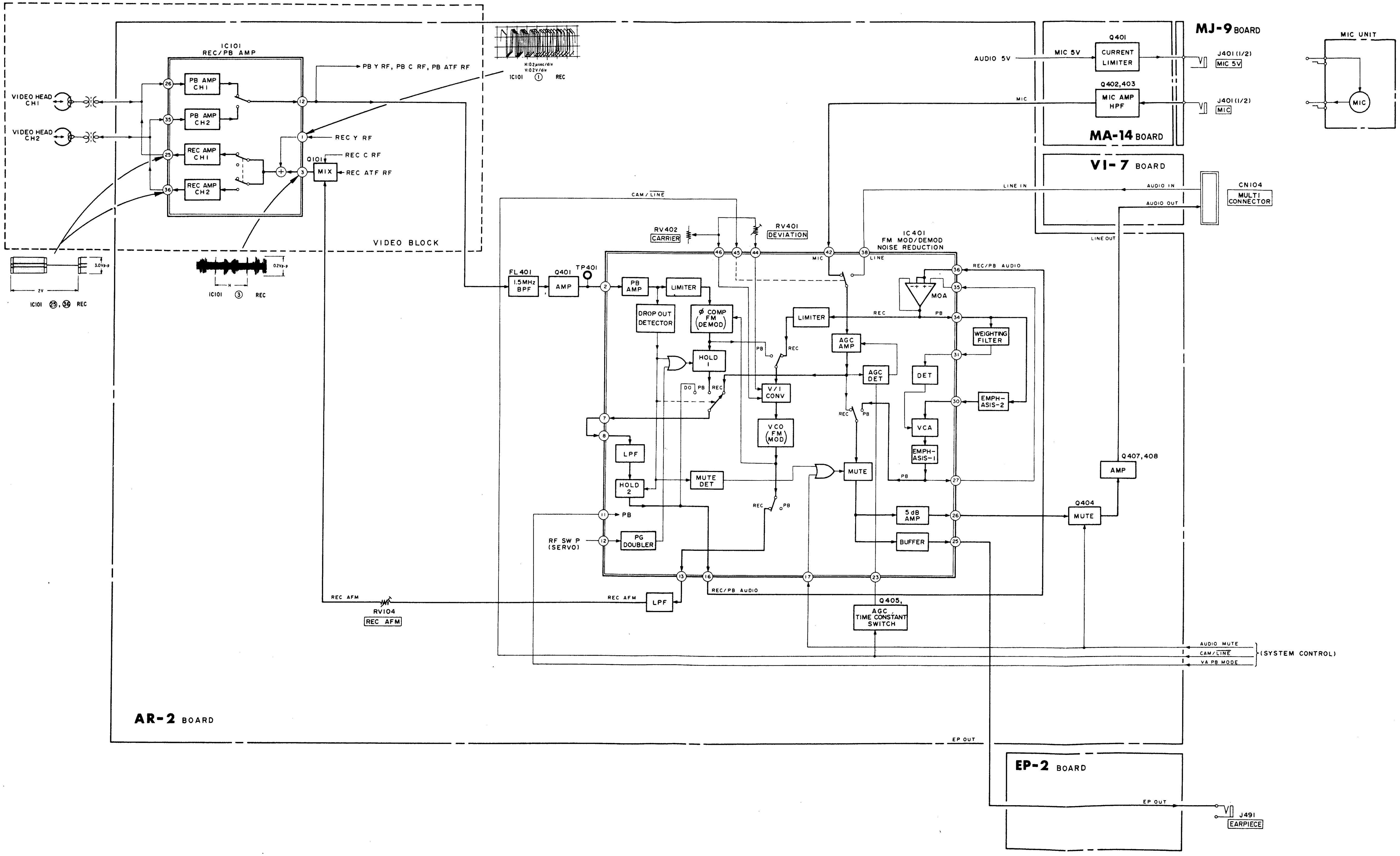
Tlack

## 3-5. VIDEO SYSTEM BLOCK DIAGRAM


IC101 ⑮, ⑯ PB
0.1Vp-p
2V
IC101 ⑬ PB
0.42Vp-p
V
IC101 ㊼ REC/PB
0.52Vp-p
H
IC101 ㊻ REC
0.58Vp-p
IC101 ㊵ PB
0.8Vp-p
IC101 ㊲ REC/PB
0.5Vp-p
IC101 ㉓ REC/PB
1.25Vp-p
IC101 ㉑ REC
H : 0.1μsec/div
V : 0.2V/div
IC101 ⑯ PB/E-E
2.2Vp-p
IC102 ② REC/PB
0.45Vp-p
IC102 ㉟ PB
0.15Vp-p
IC102 ㉞ REC
0.6Vp-p
IC102 ㉒
DRUM
VIDEO HEAD CH1
ROTARY TRANSFORMER
VIDEO HEAD CH2
RV102 CH1 PB EQ
RF CH1
TP104
IC101 REC/PB AMP
DUMPING
CH1 HEAD AMP
CH1 2ND AMP
CH2 HEAD AMP
CH2 2ND AMP
BUFFER
AMP
CH1
CH2
RF CH2
RV106 CH2 PB EQ
PB AFM
REC AFM
(AUDIO)
AFM&85MHz TRAP
LV101 PB Y TRAP
Q106
ACK JOG
CHROMA RF TRAP
SOFT LIMITER
Q104, Q105, D101
PB Y RF
PB C RF
RV104 REC AFM
RV101 REC Y
TP102
CH1 REC AMP
CH2 REC AMP
V-I CONV.
Y VOL
C VOL
Q101
MIX
REC Y RF
REC C RF
RV103 REC ATF
REC ATF RF
RV105 REC C
Q102
Q103
MP/ME SWITCH
MP/ME (VI-7 BOARD IC107)
BOTH REC CONT (SERVO)
RF SW P
RF SW P (SERVO)
R/P PB MODE (SYSTEM CONTROL)
TP103
AR-2 BOARD
0.2Vp-p
IC101 ㉔, ㊲ REC
TP109
RETURN VIDEO
CAMERA VIDEO
CAMERA REC
TALLY
(CAMERA)
IC107 SERIAL IN PARALLEL OUT
SCK BUS
SO BUS
VA S/P CS
SYSTEM RESET
(SYSTEM CONTROL)
CLK
DATA
STB
RESET
SP/LP
JOG
MP/ME
VA PB MODE
CAM/LINE
CAM REC
TALLY
VIDEO MUTE
AUDIO MUTE
SYS RESET
SYSTEM CONTROL BLOCK
(SERVO)
REC ATF
PB ATF
(AUDIO)
CAM/LINE
VA PB MODE
AUDIO MUTE
VI-7 BOARD (VIDEO)
TP127
Q122, Q123
PB 5V SWITCH
PB 5V
LINE VIDEO IN
REC/PB Y
PB Y
REC Y RF
AGC OUT
EX-3 BOARD (1/4)
Q365–368
TUNING EXPANDER
RV105 DEVIATION
RV106 PB LEVEL
VA PB MODE PB 5V
Q102–Q104 (IC107) (Q123)
Q109
REC/PB SWITCH
VA PB MODE (IC107)
RV103 CARRIER
IC101 Y PROCESS
SUB DE-EMPH
SUB PRE-EMPH
MAIN PRE-EMPHASIS
HALF H SHIFT
FM MOD
RF SW P (SERVO)
MAIN DE-EMPHASIS
PB LEVEL
REC Y TRAP
Q101
BUFFER
REC Y RF
RV104 AC CLIP
RV102 AGC
CLAMP
AGC DET
CAM/LINE (IC107)
LINE VIDEO
CAMERA VIDEO
AGC AMP
CLAMP VD ADD
VIDEO OUT LEVEL
RV101 VIDEO OUT
DOC DET
SYNC SEP
CLAMP PULSE
RF AGC
LIMITER
FM DEMOD
TP104
LPF
COMP SYNC
AGC P (IC105)
JOG VD (IC105, SERVO)
DROP OUT (IC102)
PB 5V (Q123)
EX-3 BOARD (1/4)
Q361 Q362 Q361
LIMITER
TRAP
BUFFER
DEMOD OUT
PB CHROMA
RETURN VIDEO
REC C RF
REC/PB CHROMA
VA PB MODE (IC107)
IC102 ㊷ PB
0.44Vp-p
IC101 ⑫ PB
0.7Vp-p
IC102 ④ REC/PB
0.12Vp-p
(13.3MHz)
BF2 (IC105)
IC102 COMB FILTER
VA PB MODE (IC107)
LV103 CP
DL101 2H DELAY
Q113
RV107 CD
REC/PB CHROMA
NON CORR
CORR
RV108 YD
IC102 CX20031
AGC DET
AM DET
AM MOD
DROP OUT
NORMAL
DL102 1H DELAY
X103
Q114
VA PB MODE (IC107)
EX-3 BOARD (1/4)
Q363, 364
LPF
EQ
ACK (IC104)
B/W
COLOR
PB ON
REC ON
CORRELATION DET
LIMITER
CLAMP
JOG (IC107)
EX-3 BOARD
Q370, 373
SWITCH
IC102 ㊷ REC
IC103 ⑯ REC
0.11Vp-p
IC104 ㊱ REC/PB
0.18Vp-p
(5.17MHz)
IC103 ⑯ PB
0.32Vp-p
IC103 ① REC
0.42Vp-p
IC103 ① PB
1Vp-p
IC103 CHROMA EMPHASIS
PB CHROMA
REC/PB CHROMA
VA PB MODE (IC107)
LIMTER
4.43MHz TRAP FL102
ATT
IC103 ⑫ PB
0.26Vp-p
REC CHROMA
PB C RF
FL104
BPF
RV111 VCO
RV109 CARRIER BALANCE
CARRIER INVERT
5.17MHz
CARRIER CONV.
732kHz
4.43MHz
5.9MHz
375fH VCO
APC ID
AFC
IC104 CHROMA PROCESS
Q132
BUFFER
LPF
ACK
BF 3
BF 1 (IC105)
REC C TRAP
LV102
Q126
CHROMA CONV.
BURST EMPH/DE EMPH
APC DET
APC DET SW&AMP
ACK DET
4.43MHz X'TAL OSC
90° SHIFT
CV101 FSC
X101
SV 4.43MHz
ACC AMP
ACC DET
PEAK HOLD
CHROMA INVERT
JOG (IC107)
RF SW P (SERVO)
PB 5V (Q123)
FL103
PEC C BPF
Q127
AMP
IC104 ⑥ REC/PB
4Vp-p
IC104 ⑰ PB
0.1Vp-p
(4.43MHz)
IC104 ㉒ E-E
0.21Vp-p
IC104 ㉒ PB
IC104 ㊵ REC
0.36Vp-p
IC104 ⑳㉑ REC/PB
IC108 ⑯ REC/PB
3.2Vp-p
JOG CHR
6dB
MAIN SWITCH
FL105 3.7MHz BPF
FL106 5.17MHz BPF
S/H
LPF
BURST DET
1/2fH

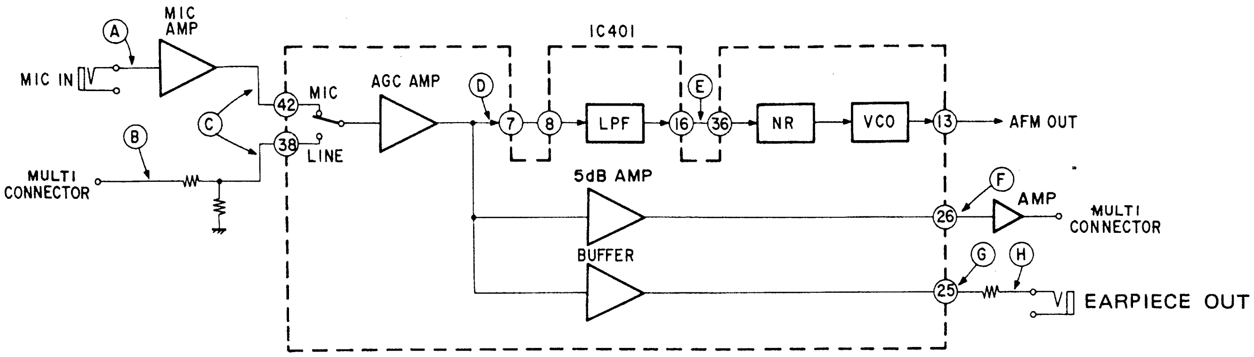

IC101 ㊵ PB
IC101 ㊲ REC/PB
IC101 ㉓ REC/PB
IC101 ㉑ REC
IC101 ⑯ PB/E-E
IC102 ② REC/PB
IC102 ㉟ PB
IC102 ㉞ REC
IC102 ㉒ PB
IC102 ㉔ REC
IC102 ⑱ REC/PB
LINE VIDEO IN
REC/PB Y
PB Y
REC Y RF
AGC OUT
EX-3 BOARD (1/4)
Q365-368
TUNING EXPANDER
RV105 DEVIATION
RV106 PB LEVEL
VA PB MODE PB 5V
Q102-Q104 (IC107) (Q123)
Q109
REC/PB SWITCH
RV103 CARRIER
IC101 Y PROCESS
SUB DE-EMPH
SUB PRE-EMPH
MAIN PRE-EMPHASIS
HALF H SHIFT
FM MOD
RF SW P (SERVO)
REC Y TRAP
Q101 BUFFER
REC Y RF
MAIN DE-EMPHASIS
PB LEVEL
CAM/LINE (IC107)
CLAMP
AGC DET
RV104 AC CLIP
RV102 AGC
VA PB MODE (IC107)
LINE VIDEO
CAMERA VIDEO
AGC AMP
CLAMP VD ADD
VIDEO OUT LEVEL
RV101 VIDEO OUT
TP104
LPF
SYNC SEP
CLAMP PULSE
DOC DET
RF AGC
LIMITER
FM DEMOD
COMP SYNC
AGC P (IC105)
PB CHROMA
JOG VD (IC105, SERVO)
DROP OUT (IC102)
PB 5V (Q123)
IC101 ⑫ PB
IC102 ④ REC/PB
(13.3 MHz)
EX-3 BOARD (1/4)
D361 Q362 Q361
LIMITER TRAP BUFFER LPF
DEMOD OUT
RETURN VIDEO
REC C RF
PB CHROMA
REC/PB CHROMA
BF2 (IC105)
IC102 COMB FILTER
VA PB MODE (IC107)
LV103 CP
DL101 2H DELAY
Q113
RV107 CD
REC/PB CHROMA
IC102 ㊷ PB
CORRELATION DET
LIMITER
IC102 CX20031
RV108 YD
AGC DET
AM DET
AM MOD
DL102 1H DELAY
CLAMP
X103
Q114
VA PB MODE (IC107)
JOG (IC107)
DROP OUT (IC101)
REC ON
PB ON
COLOR
B/W
NON CORR
CORR
EX-3 BOARD (1/4)
Q363,364
LPF EQ
ACK (IC104)
CN104 MULTI CONNECTOR
TP121
TP108
LINE VIDEO IN
LINE VIDEO OUT
IC105 ㉝ REC/PB
IC105 ㊾ PB
IC105 ③ REC
IC105 ㊽ REC
IC101 ② REC
IC105 ①, ⑮ REC/PB
JOG (IC107)
VIDEO MUTE (IC107)
ACK (IC104)
IC105 AFC, PULSE GENERATOR
V SEP
REF V (SERVO)
RF SW P (SERVO)
HALF H KILLER
SYNTHESIS GATE
COMP SYNC (IC101)
VA PB MODE
SYS RESET
VARIABLE DIVIDER
DELAY PULSE GENERATOR
AFC AFC ID
1/8 PHASE SHIFT
375fH
AGC P
BF2
BF1
EX-3 BOARD (1/4)
Q370,373,374
SWITCH
EDIT ON (SYSTEM CONTROL)
IC105 ㊻ REC
IC105 ㊻ PB
IC105 ㊹ REC/PB
IC105 ㉟ REC/PB
IC105 ㉜ (TP128) REC/PB
IC105 ㊲ REC/PB
IC105 ㊷ REC
IC105 ㊶ REC
JOG VD (SERVO)
TP127
Q123
PB 5V SWITCH
IC102 ㊷ REC
IC103 ⑯ REC
IC104 ㊱ REC/PB
(5.17MHz)
IC103 CHROMA EMPHASIS
PB CHROMA
REC/PB CHROMA
LIMTER
4.43MHz TRAP
FL102
ATT
VA PB MODE (IC107)
IC103 ⑫ PB
REC CHROMA
FL103 PEC C BPF
PB C RF
BPF
Q127 AMP
FL104 BPF
RV109 CARRIER BALANCE
REC C TRAP
LV102
Q126 BUFFER
LPF
RV111 VCO
IC104 CHROMA PROCESS
CARRIER INVERT
CARRIER CONV.
375fH VCO
APC ID
AFC
CHROMA CONV.
BURST EMPH/DE EMPH
APC DET
APC DET SW&AMP
ACK DET
ACK
4.43MHz X'TAL OSC
90° SHIFT
CV101 FSC
X101
ACC AMP
ACC DET
PEAK HOLD
CHROMA INVERT
Q132 BUFFER
BF 3
BF 1 (IC105)
SV4.43MHz
JOG (IC107)
RF SW P (SERVO)
PB 5V (Q123)
IC104 ⑰ PB
(4.43MHz)
IC104 ⑥ REC/PB
IC104 ㊵ REC
IC104 ㉒ E-E
IC104 ㉒ PB
IC104 ⑳,㉑ REC/PB
IC108 ⑯ REC/PB
Q131 SWITCH
IC108 JOG CHROMA PROCESS
6dB
APC CORRECTION
GCA
SV 4.43MHz (IC104)
PHASE SHIFT
QUASI BURST
MAIN SWITCH
RV113 GCA
1/2FH
FL105 3.7MHz BPF
FL106 5.17MHz BPF
BURST ID DET
SEQUENCE DET
SWICH CONTROL
IIL LOGIC
CLF GENERATOR
S/H
FH VCO
RV112 FH
D103
VA PB MODE
JOG
BF 3 (IC104)
IC108 ㉓ REC
IC108 ㉓ PB
IC108 ⑱ REC/PB
IC108 ⑤ REC/PB
IC108 ⑫ REC/PB
IC108 ⑮ REC/PB
DROP OUT (IC102)
Q352, 353 SWITCH
Q351 SWITCH
D351
JOG (IC107)
TK-2 BOARD

## 3-6. VIDEO/AUDIO BLOCK DIAGRAM

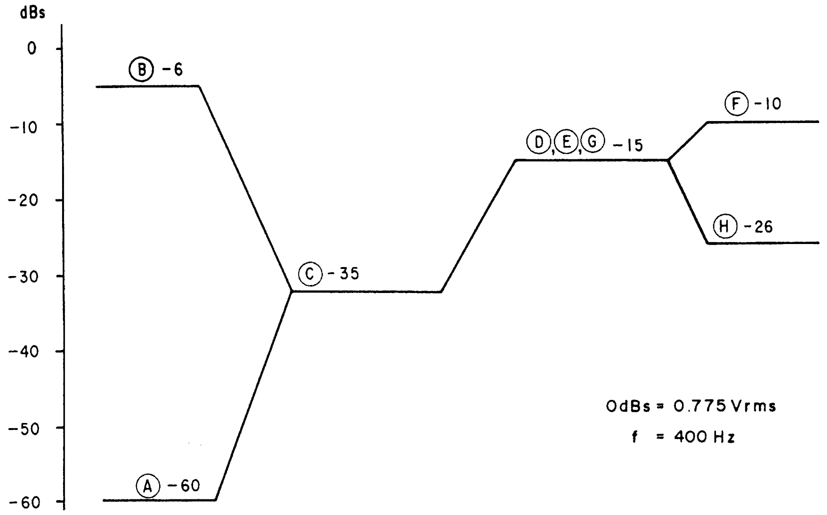


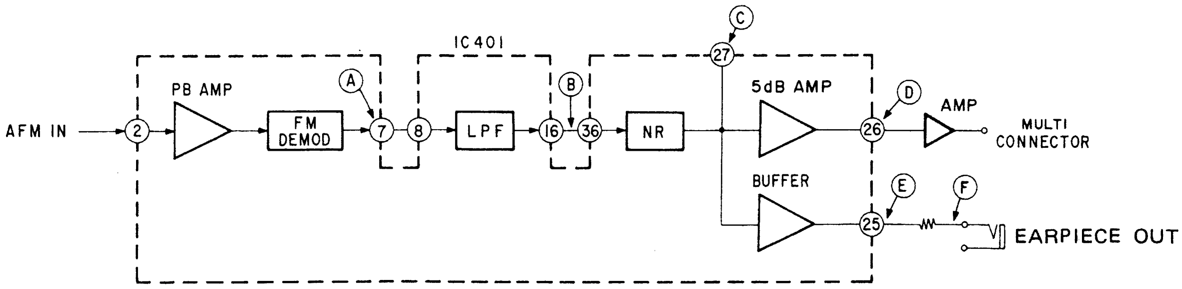
IC101
REC/PB AMP
VIDEO HEAD CH1
VIDEO HEAD CH2
PB AMP CH1
PB AMP CH2
REC AMP CH1
REC AMP CH2
PB Y RF, PB C RF, PB ATF RF
REC Y RF
REC C RF
REC ATF RF
Q101
MIX
VIDEO BLOCK
H:0.2μsec/div
V:0.2V/div
IC101 ① REC
3.0Vp-p
2V
IC101 ㉕, ㊱ REC
0.2Vp-p
H
IC101 ③ REC
CAM/LINE
RV402
CARRIER
RV401
DEVIATION
IC401
FM MOD/DEMOD
NOISE REDUCTION
FL401
1.5MHz BPF
Q401
AMP
TP401
PB AMP
LIMITER
DROP OUT DETECTOR
φ COMP FM DEMOD
HOLD 1
DO PB REC
V/I CONV
VCO (FM MOD)
LIMITER
PB REC
MIC LINE
REC PB
AGC AMP
AGC DET
MOA
WEIGHTING FILTER
DET
EMPH-ASIS-2
VCA
EMPH-ASIS-1
LPF
HOLD 2
MUTE DET
MUTE
5dB AMP
BUFFER
PB
RF SW P (SERVO)
PG DOUBLER
REC/PB AUDIO
REC AFM
RV104
REC AFM
LPF
Q405
AGC TIME CONSTANT SWITCH
Q404
MUTE
Q407,408
AMP
AUDIO 5V
MIC 5V
Q401
CURRENT LIMITER
Q402,403
MIC AMP HPF
MIC
J401 (1/2)
MIC 5V
J401 (1/2)
MIC
MJ-9 BOARD
MA-14 BOARD
MIC UNIT
MIC
VI-7 BOARD
LINE IN
AUDIO IN
AUDIO OUT
LINE OUT
CN104
MULTI CONNECTOR
AUDIO MUTE
CAM/LINE
VA PB MODE
(SYSTEM CONTROL)
AR-2 BOARD
EP OUT
EP-2 BOARD
EP OUT
J491
EARPIECE

## 3-7. AUDIO LEVEL DIAGRAM

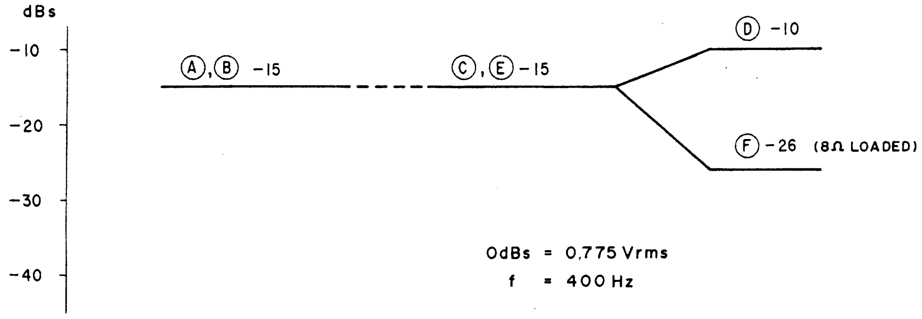


MIC AMP
A
MIC IN
B
MULTI CONNECTOR
C
42
38
MIC
LINE
AGC AMP
D
IC401
7
8
LPF
16
E
36
NR
VCO
13
AFM OUT
5dB AMP
F
26
AMP
MULTI CONNECTOR
BUFFER
G
H
25
EARPIECE OUT

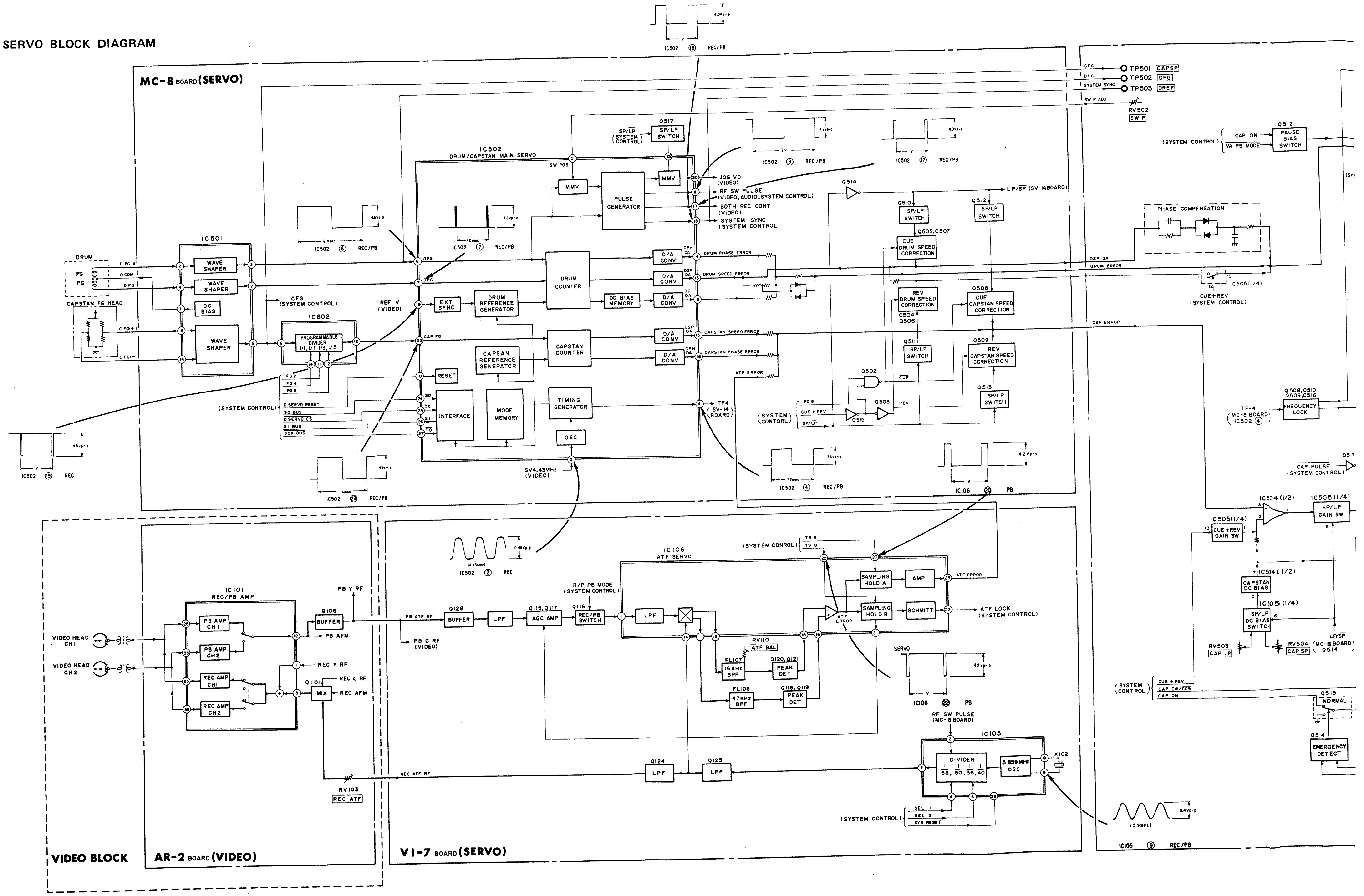


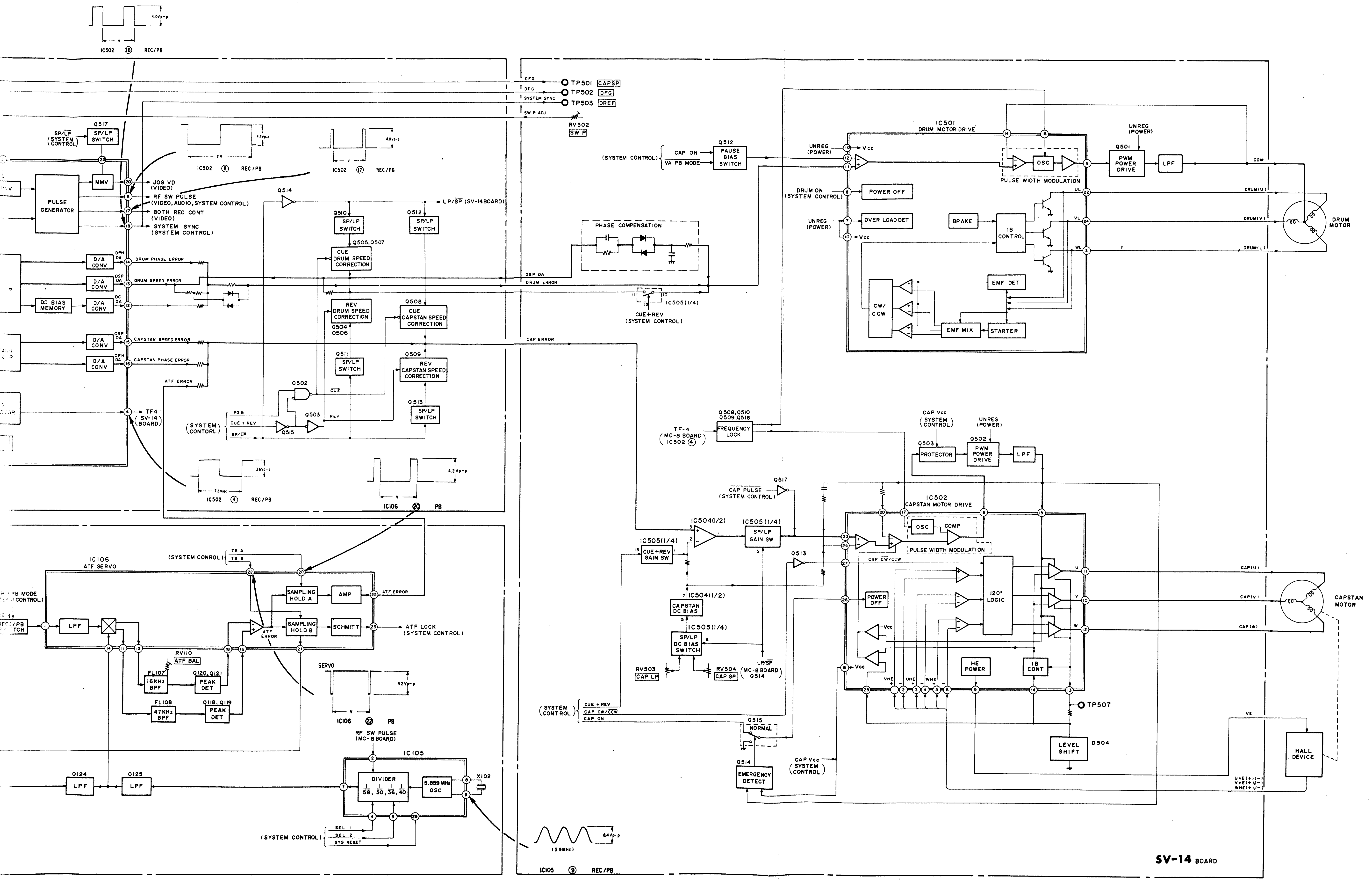


C
27
IC401
AFM IN
2
PB AMP
FM DEMOD
A
7
8
LPF
B
16
36
NR
5dB AMP
D
26
AMP
MULTI CONNECTOR
BUFFER
E
F
25
EARPIECE OUT



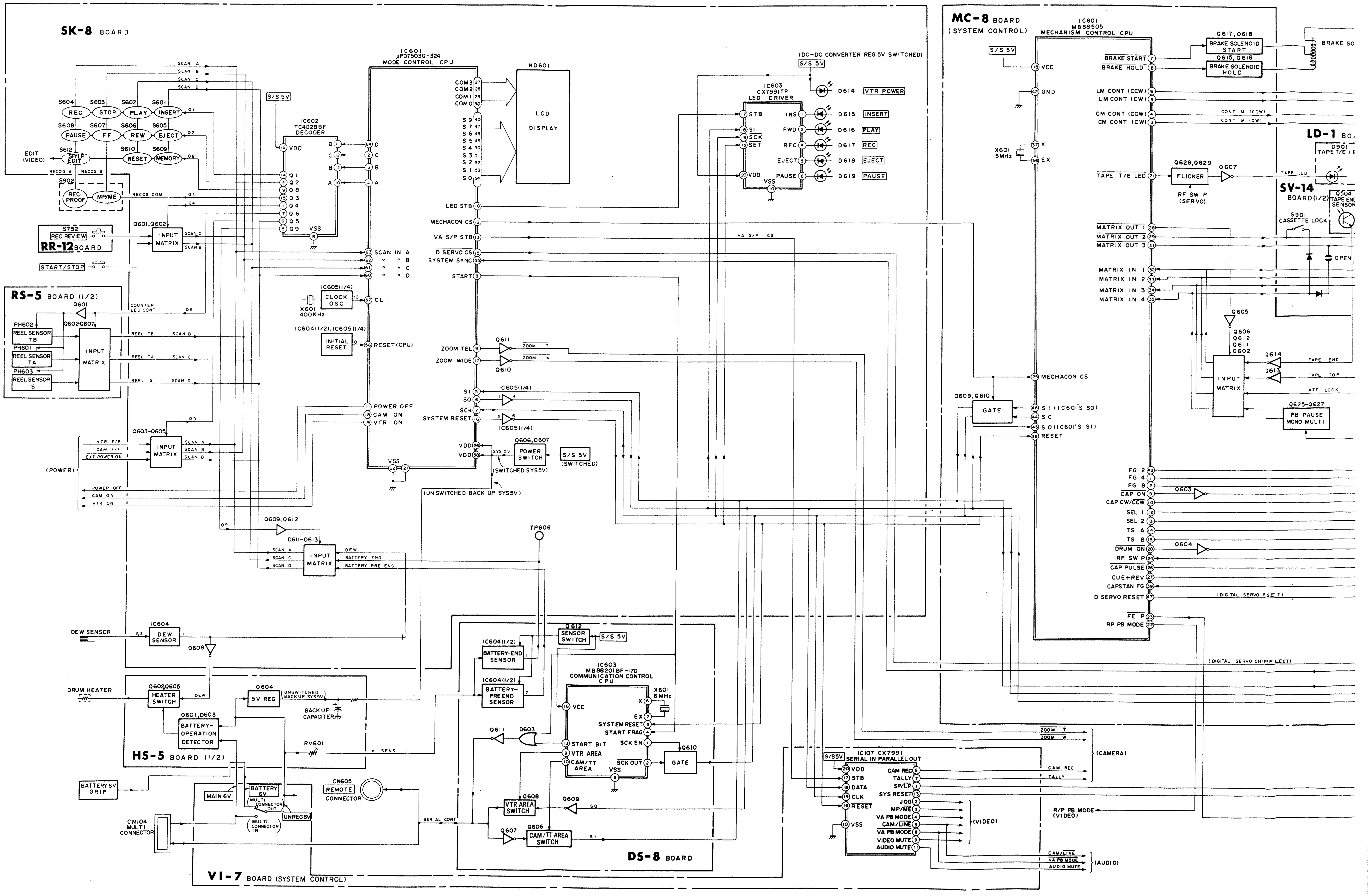
## 3-8. SERVO BLOCK DIAGRAM

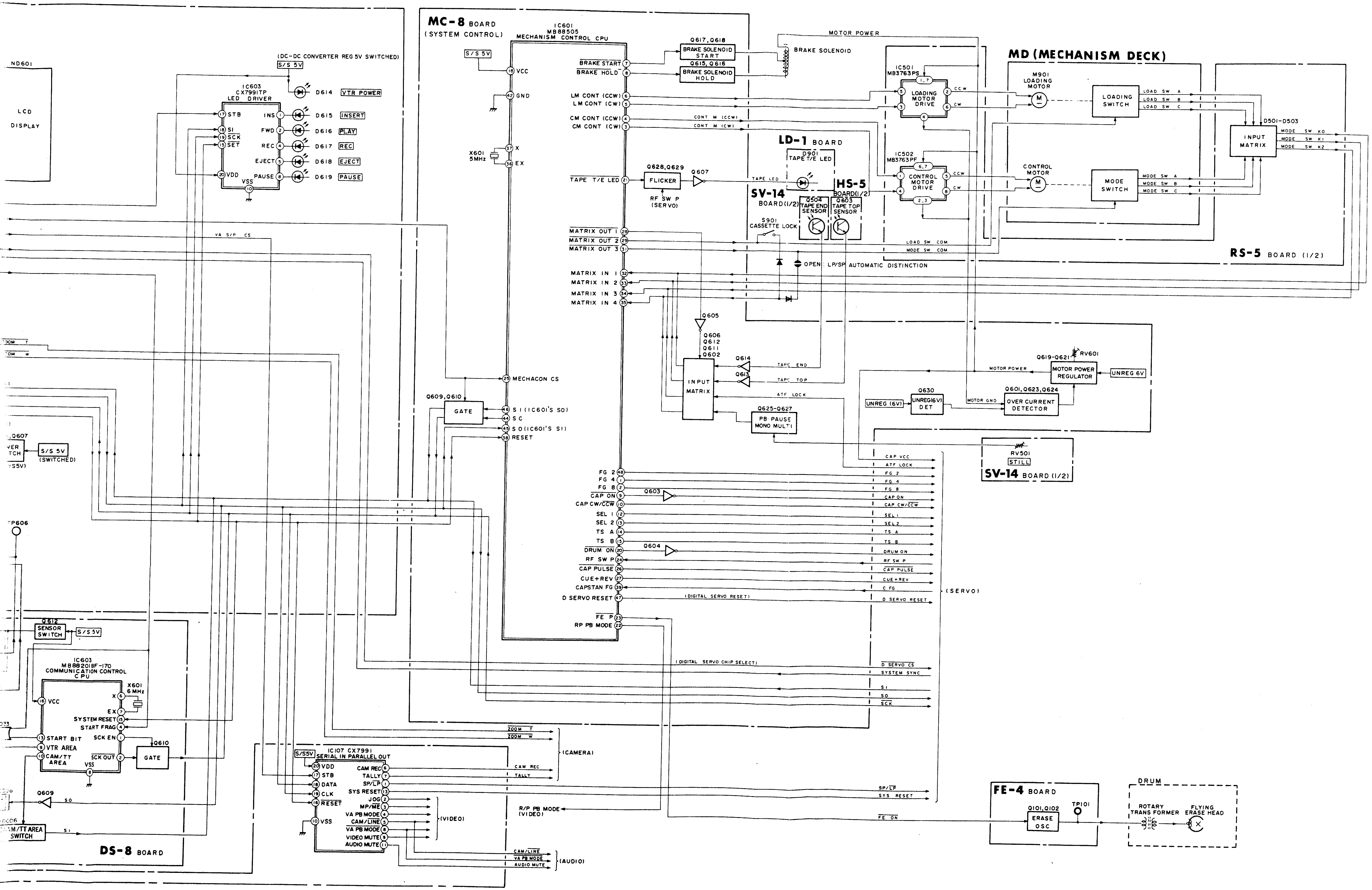

MC-8 BOARD (SERVO)
IC501
WAVE SHAPER
WAVE SHAPER
DC BIAS
WAVE SHAPER
DRUM
FG
PG
CAPSTAN FG HEAD
D FG A
D COM
D PG
C FG(+)
C FG(−)
CFG (SYSTEM CONTROL)
IC602
PROGRAMMABLE DIVIDER 1/1, 1/7, 1/9, 1/15
FG 2
FG 4
FG 8
(SYSTEM CONTROL)
D SERVO RESET
SO BUS
D SERVO CS
SI BUS
SCK BUS
IC502
DRUM/CAPSTAN MAIN SERVO
SW POS
DFG
DPG
REF V (VIDEO)
CAP FG
EXT SYNC
DRUM REFERENCE GENERATOR
CAPSAN REFERENCE GENERATOR
RESET
INTERFACE
MODE MEMORY
MMV
PULSE GENERATOR
MMV
DRUM COUNTER
CAPSTAN COUNTER
DC BIAS MEMORY
TIMING GENERATOR
OSC
D/A CONV
D/A CONV
D/A CONV
D/A CONV
D/A CONV
DPH DA
DSP DA
DC DA
CSP DA
CPH DA
SV4.43MHz (VIDEO)
SP/LP (SYSTEM CONTROL)
Q517 SP/LP SWITCH
JOG VD (VIDEO)
RF SW PULSE (VIDEO, AUDIO, SYSTEM CONTROL)
BOTH REC CONT (VIDEO)
SYSTEM SYNC (SYSTEM CONTROL)
DRUM PHASE ERROR
DRUM SPEED ERROR
CAPSTAN SPEED ERROR
CAPSTAN PHASE ERROR
ATF ERROR
TF4 (SV-14 BOARD)
Q514
LP/SP (SV-14BOARD)
Q510 SP/LP SWITCH
Q512 SP/LP SWITCH
CUE DRUM SPEED CORRECTION
Q505, Q507
REV DRUM SPEED CORRECTION
Q504 Q506
Q508 CUE CAPSTAN SPEED CORRECTION
Q511 SP/LP SWITCH
Q509 REV CAPSTAN SPEED CORRECTION
Q513 SP/LP SWITCH
Q502
CUE
REV
Q503
Q515
(SYSTEM CONTORL)
FG 8
CUE + REV
SP/LP
IC502 ⑱ REC/PB
IC502 ⑧ REC/PB
IC502 ⑰ REC/PB
IC502 ⑥ REC/PB
IC502 ⑦ REC/PB
IC502 ⑲ REC
IC502 ㉓ REC/PB
IC502 ④ REC/PB
IC106 ㉔ PB
IC502 ② REC
IC106 ㉒ PB
IC105 ⑨ REC/PB
4.0Vp-p
4.2Vp-p
4.0Vp-p
4.6Vp-p
4.6Vp-p
4.8Vp-p
4Vp-p
3.6Vp-p
4.2Vp-p
0.45Vp-p
4.2Vp-p
8.4Vp-p
16 msec
40 msec
1.4 msec
7.2 msec
2V
V
(4.43MHz)
(5.9MHz)
CFG
DFG
SYSTEM SYNC
SW P ADJ
TP501 CAPSP
TP502 DFG
TP503 DREF
RV502 SW P
Q512 PAUSE BIAS SWITCH
(SYSTEM CONTROL)
CAP ON
VA PB MODE
PHASE COMPENSATION
DSP DA
DRUM ERROR
IC505(1/4)
CUE+REV (SYSTEM CONTROL)
CAP ERROR
Q508, Q510 Q509, Q516
FREQUENCY LOCK
TF-4 (MC-8 BOARD IC502 ④)
CAP PULSE (SYSTEM CONTROL)
Q517
IC504(1/2)
IC505(1/4)
SP/LP GAIN SW
IC505(1/4)
CUE+REV GAIN SW
CAPSTAN DC BIAS
IC504(1/2)
IC505(1/4)
SP/LP DC BIAS SWITCH
RV503 CAP LP
RV504 CAP SP
LP/SP (MC-8 BOARD) Q514
(SYSTEM CONTROL)
CUE + REV
CAP CW/CCW
CAP ON
Q515 NORMAL
Q514 EMERGENCY DETECT
VIDEO BLOCK
AR-2 BOARD (VIDEO)
IC101 REC/PB AMP
VIDEO HEAD CH1
VIDEO HEAD CH2
PB AMP CH1
PB AMP CH2
REC AMP CH1
REC AMP CH2
Q106 BUFFER
PB Y RF
PB AFM
REC Y RF
Q101 MIX
REC C RF
REC AFM
RV103 REC ATF
V1-7 BOARD (SERVO)
PB ATF RF
PB C RF (VIDEO)
Q128 BUFFER
LPF
Q115, Q117 AGC AMP
Q116 REC/PB SWITCH
R/P PB MODE (SYSTEM CONTROL)
IC106 ATF SERVO
(SYSTEM CONROL)
TS A
TS B
LPF
SAMPLING HOLD A
AMP
SAMPLING HOLD B
SCHMIT.T
ATF ERROR
ATF ERROR
ATF LOCK (SYSTEM CONTROL)
RV110 ATF BAL
FL107 16KHz BPF
Q120, Q121 PEAK DET
FL108 47KHz BPF
Q118, Q119 PEAK DET
SERVO
RF SW PULSE (MC-8 BOARD)
REC ATF RF
Q124 LPF
Q125 LPF
IC105
DIVIDER 1/58, 1/50, 1/36, 1/40
5.859MHz OSC
X102
(SYSTEM CONTROL)
SEL 1
SEL 2
SYS RESET



4.0Vp-p
IC502 ⑱ REC/PB
CFG
DFG
SYSTEM SYNC
SW P ADJ
TP501 CAPSP
TP502 DFG
TP503 DREF
RV502
SW P
Q517
SP/LP (SYSTEM CONTROL)
SP/LP SWITCH
2V
4.2Vp-p
IC502 ⑧ REC/PB
4.0Vp-p
IC502 ⑰ REC/PB
PULSE GENERATOR
MMV
JOG VD (VIDEO)
RF SW PULSE (VIDEO, AUDIO, SYSTEM CONTROL)
BOTH REC CONT (VIDEO)
SYSTEM SYNC (SYSTEM CONTROL)
Q514
LP/SP (SV-14 BOARD)
Q510
SP/LP SWITCH
Q512
SP/LP SWITCH
Q505,Q507
CUE DRUM SPEED CORRECTION
D/A CONV
DRUM PHASE ERROR
DRUM SPEED ERROR
DC BIAS MEMORY
REV DRUM SPEED CORRECTION
Q504 Q506
Q508
CUE CAPSTAN SPEED CORRECTION
CAPSTAN SPEED ERROR
CAPSTAN PHASE ERROR
ATF ERROR
Q511
SP/LP SWITCH
Q509
REV CAPSTAN SPEED CORRECTION
Q502
Q503
Q513
SP/LP SWITCH
TF4 (SV-14 BOARD)
(SYSTEM CONTORL)
FG 8
CUE + REV
SP/LP
Q515
CUE
REV
36Vp-p
7.2msec
IC502 ④ REC/PB
4.2Vp-p
IC106 ⑳ PB
DSP DA
DRUM ERROR
CAP ERROR
PHASE COMPENSATION
IC505(1/4)
CUE+REV (SYSTEM CONTROL)
(SYSTEM CONTROL)
CAP ON
VA PB MODE
Q512
PAUSE BIAS SWITCH
IC501
DRUM MOTOR DRIVE
UNREG (POWER)
Vcc
DRUM ON (SYSTEM CONTROL)
POWER OFF
OVER LOAD DET
BRAKE
IB CONTROL
OSC
PULSE WIDTH MODULATION
Q501
PWM POWER DRIVE
LPF
COM
UL
VL
WL
DRUM(U)
DRUM(V)
DRUM(L)
DRUM MOTOR
CW/CCW
EMF DET
EMF MIX
STARTER
TF-4 (MC-8 BOARD) IC502 ④
Q508,Q510 Q509,Q516
FREQUENCY LOCK
CAP Vcc (SYSTEM CONTROL)
UNREG (POWER)
Q503
PROTECTOR
Q502
PWM POWER DRIVE
LPF
CAP PULSE (SYSTEM CONTROL)
Q517
IC502
CAPSTAN MOTOR DRIVE
OSC
COMP
PULSE WIDTH MODULATION
IC504(1/2)
IC505(1/4)
SP/LP GAIN SW
IC505(1/4)
CUE+REV GAIN SW
Q513
CAP CW/CCW
IC504(1/2)
CAPSTAN DC BIAS
IC505(1/4)
SP/LP DC BIAS SWITCH
RV503
CAP LP
RV504
CAP SP
LP/SP (MC-8 BOARD) Q514
POWER OFF
120° LOGIC
HE POWER
IB CONT
CAP(U)
CAP(V)
CAP(W)
CAPSTAN MOTOR
VHE
UHE
WHE
TP507
LEVEL SHIFT
D504
VE
HALL DEVICE
UHE(+)(−)
VHE(+)(−)
WHE(+)(−)
(SYSTEM CONTROL)
CUE + REV
CAP CW/CCW
CAP ON
Q515
NORMAL
Q514
EMERGENCY DETECT
CAP Vcc (SYSTEM CONTROL)
IC106
ATF SERVO
(SYSTEM CONROL)
TS A
TS B
PB MODE (SYSTEM CONTROL)
REC/PB SWITCH
LPF
SAMPLING HOLD A
AMP
ATF ERROR
SAMPLING HOLD B
SCHMITT
ATF LOCK (SYSTEM CONTROL)
ATF ERROR
RV110
ATF BAL
FL107
16KHz BPF
Q120,Q121
PEAK DET
FL108
47KHz BPF
Q118,Q119
PEAK DET
SERVO
4.2Vp-p
IC106 ㉒ PB
RF SW PULSE (MC-8 BOARD)
IC105
DIVIDER
58, 50, 36, 40
5.859MHz OSC
X102
Q124
LPF
Q125
LPF
(SYSTEM CONTROL)
SEL 1
SEL 2
SYS RESET
8.4Vp-p
(5.9MHz)
IC105 ⑨ REC/PB
SV-14 BOARD

## 3-9. SYSTEM CONTROL BLOCK DIAGRAM


SK-8 BOARD
IC601 μPD7503G-324 MODE CONTROL CPU
IC602 TC4028BF DECODER
ND601
LCD DISPLAY
S604 REC
S603 STOP
S602 PLAY
S601 INSERT
S608 PAUSE
S607 FF
S606 REW
S605 EJECT
S612 S/V/D EDIT
S610 RESET
S609 MEMORY
EDIT (VIDEO)
S902 REC PROOF
MP/ME
RECOG A
RECOG B
RECOG COM
S752 REC REVIEW
RR-12 BOARD
START/STOP
Q601,Q602 INPUT MATRIX
RS-5 BOARD (1/2)
REEL SENSOR TB
REEL SENSOR TA
REEL SENSOR S
PH602
PH601
PH603
Q602,Q607
COUNTER LED CONT
INPUT MATRIX
Q603-Q605 INPUT MATRIX
VTR F/F
CAM F/F
EXT POWER ON
(POWER)
POWER OFF
CAM ON
VTR ON
S/S 5V
SCAN A
SCAN B
SCAN C
SCAN D
SCAN IN A
IC605(1/4) CLOCK OSC
X601 400KHz
CL I
IC604(1/2),IC605(1/4) INITIAL RESET
RESET(CPU)
POWER OFF
CAM ON
VTR ON
VSS
COM3
COM2
COM1
COM0
LED STB
MECHACON CS
VA S/P STB
D SERVO CS
SYSTEM SYNC
START
ZOOM TEL
ZOOM WIDE
Q611
Q610
SI
SO
SCK
SYSTEM RESET
IC605(1/4)
VDD
Q606,Q607 POWER SWITCH
S/S 5V (SWITCHED)
(SWITCHED SYS5V)
(UN SWITCHED BACK UP SYS5V)
Q609,Q612
D611-D613 INPUT MATRIX
DEW
BATTERY END
BATTERY PRE END
TP606
(DC-DC CONVERTER REG 5V SWITCHED)
IC603 CX7991TP LED DRIVER
STB
SI
SCK
SET
INS
FWD
REC
EJECT
PAUSE
D614 VTR POWER
D615 INSERT
D616 PLAY
D617 REC
D618 EJECT
D619 PAUSE
VA S/P CS
DEW SENSOR
IC604 DEW SENSOR
Q608
DRUM HEATER
Q602,Q605 HEATER SWITCH
Q604 5V REG
UNSWITCHED BACK UP SYS5V
BACK UP CAPACITER
Q601,D603 BATTERY-OPERATION DETECTOR
RV601
V SENS
HS-5 BOARD (1/2)
BATTERY 6V GRIP
CN104 MULTI CONNECTOR
MAIN 6V
BATTERY 6V
MULTI CONNECTOR OUT
MULTI CONNECTOR IN
UNREG 6V
CN605 REMOTE CONNECTOR
SERIAL CONT
VI-7 BOARD (SYSTEM CONTROL)
Q612 SENSOR SWITCH
IC604(1/2) BATTERY-END SENSOR
IC604(1/2) BATTERY-PREEND SENSOR
IC603 MB88201BF-170 COMMUNICATION CONTROL CPU
X601 6MHz
VCC
SYSTEM RESET
START FRAG
START BIT
VTR AREA
CAM/TT AREA
SCK EN
SCK OUT
Q610 GATE
D603
Q608 VTR AREA SWITCH
Q609
Q606 CAM/TT AREA SWITCH
Q607
DS-8 BOARD
MC-8 BOARD (SYSTEM CONTROL)
IC601 MB88505 MECHANISM CONTROL CPU
X601 5MHz
GND
BRAKE START
BRAKE HOLD
Q617,Q618 BRAKE SOLENOID START
Q615,Q616 BRAKE SOLENOID HOLD
BRAKE SO
LM CONT (CCW)
LM CONT (CW)
CM CONT (CCW)
CM CONT (CW)
CONT M (CCW)
CONT M (CW)
LD-1 BO
D901 TAPE T/E LED
TAPE T/E LED
Q628,Q629 FLICKER
Q607
RF SW P (SERVO)
SV-14 BOARD (1/2)
Q504 TAPE END SENSOR
S901 CASSETTE LOCK
OPEN
MATRIX OUT 1
MATRIX OUT 2
MATRIX OUT 3
MATRIX IN 1
MATRIX IN 2
MATRIX IN 3
MATRIX IN 4
Q605
Q606 Q612 Q611 Q602
Q614
Q613
INPUT MATRIX
TAPE END
TAPE TOP
ATF LOCK
Q625-Q627 PB PAUSE MONO MULTI
MECHACON CS
Q609,Q610 GATE
SI (IC601'S SO)
SC
SO (IC601'S SI)
RESET
FG 2
FG 4
FG 8
CAP ON
Q603
CAP CW/CCW
SEL 1
SEL 2
TS A
TS B
DRUM ON
Q604
RF SW P
CAP PULSE
CUE+REV
CAPSTAN FG
D SERVO RESET
(DIGITAL SERVO RISE T)
FE P
RP PB MODE
(DIGITAL SERVO CHIPSELECT)
ZOOM T
ZOOM W
(CAMERA)
CAM REC
TALLY
IC107 CX7991 SERIAL IN PARALLEL OUT
VDD
STB
DATA
CLK
RESET
VSS
CAM REC
TALLY
SP/LP
SYS RESET
JOG
MP/ME
VA PB MODE
CAM/LINE
VA PB MODE
VIDEO MUTE
AUDIO MUTE
(VIDEO)
R/P PB MODE (VIDEO)
CAM/LINE
VA PB MODE
AUDIO MUTE
(AUDIO)


MC-8 BOARD (SYSTEM CONTROL)
IC601 MB88505 MECHANISM CONTROL CPU
S/S 5V
VCC
GND
X601 5MHz
X
EX
BRAKE START
BRAKE HOLD
LM CONT (CCW)
LM CONT (CW)
CM CONT (CCW)
CM CONT (CW)
TAPE T/E LED
MATRIX OUT 1
MATRIX OUT 2
MATRIX OUT 3
MATRIX IN 1
MATRIX IN 2
MATRIX IN 3
MATRIX IN 4
MECHACON CS
S I (IC601'S SO)
S C
S O (IC601'S SI)
RESET
Q609,Q610
GATE
Q617,Q618 BRAKE SOLENOID START
Q615,Q616 BRAKE SOLENOID HOLD
MOTOR POWER
BRAKE SOLENOID
CONT M (CCW)
CONT M (CW)
Q628,Q629 FLICKER
Q607
RF SW P (SERVO)
TAPE LED
LD-1 BOARD
D901 TAPE T/E LED
SV-14 BOARD(1/2)
HS-5 BOARD(1/2)
Q504 TAPE END SENSOR
Q603 TAPE TOP SENSOR
S901 CASSETTE LOCK
OPEN LP/SP AUTOMATIC DISTINCTION
Q605
Q606 Q612 Q611 Q602
INPUT MATRIX
Q614
Q613
TAPE END
TAPE TOP
ATF LOCK
Q625-Q627 PB PAUSE MONO MULTI
IC501 MB3763PS LOADING MOTOR DRIVE
IC502 MB3763PF CONTROL MOTOR DRIVE
CCW
CW
MD (MECHANISM DECK)
M901 LOADING MOTOR
CONTROL MOTOR
LOADING SWITCH
MODE SWITCH
LOAD SW A
LOAD SW B
LOAD SW C
MODE SW A
MODE SW B
MODE SW C
D501-D503
INPUT MATRIX
MODE SW K0
MODE SW K1
MODE SW K2
LOAD SW COM
MODE SW COM
RS-5 BOARD (1/2)
Q619-Q621 MOTOR POWER REGULATOR
RV601
UNREG 6V
Q630 UNREG(6V) DET
UNREG (6V)
MOTOR GND
Q601,Q623,Q624 OVER CURRENT DETECTOR
RV501 STILL
SV-14 BOARD (1/2)
FG 2
FG 4
FG 8
CAP ON
CAP CW/CCW
SEL 1
SEL 2
TS A
TS B
DRUM ON
RF SW P
CAP PULSE
CUE+REV
CAPSTAN FG
D SERVO RESET
FE P
RP PB MODE
Q603
Q604
CAP VCC
ATF LOCK
C FG
(DIGITAL SERVO RESET)
(SERVO)
(DIGITAL SERVO CHIP SELECT)
D SERVO CS
SYSTEM SYNC
SI
SO
SCK
ND601
LCD DISPLAY
(DC-DC CONVERTER REG 5V SWITCHED)
S/S 5V
IC603 CX7991TP LED DRIVER
STB
SI
SCK
SET
VDD
VSS
INS
FWD
REC
EJECT
PAUSE
D614 VTR POWER
D615 INSERT
D616 PLAY
D617 REC
D618 EJECT
D619 PAUSE
VA S/P CS
ZOOM T
ZOOM W
Q607
S/S 5V (SWITCHED)
TP606
Q612 SENSOR SWITCH
S/S 5V
IC603 MB88201BF-170 COMMUNICATION CONTROL CPU
X601 6MHz
VCC
X
EX
SYSTEM RESET
START FRAG
SCK EN
SCK OUT
START BIT
VTR AREA
CAM/TT AREA
VSS
Q610 GATE
Q609
SO
SI
CAM/TT AREA SWITCH
DS-8 BOARD
IC107 CX7991 SERIAL IN PARALLEL OUT
S/S5V
VDD
STB
DATA
CLK
RESET
VSS
CAM REC
TALLY
SP/LP
SYS RESET
JOG
MP/ME
VA PB MODE
CAM/LINE
VA PB MODE
VIDEO MUTE
AUDIO MUTE
ZOOM T
ZOOM W
(CAMERA)
CAM REC
TALLY
(VIDEO)
R/P PB MODE (VIDEO)
CAM/LINE
VA PB MODE
AUDIO MUTE
(AUDIO)
SP/LP
SYS RESET
FE ON
FE-4 BOARD
Q101,Q102 ERASE OSC
TP101
DRUM
ROTARY TRANS FORMER
FLYING ERASE HEAD

## 3-10. SYSTEM CONTROL – CAMERA, VIDEO AND AUDIO BLOCK INTERFACE

| SIGNAL | I/O | REF. NO., PIN NO. | MODE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STOP | FF | REW | CUE | RE-VIEW | PB | PB·PAUSE | REC | REC·PAUSE | RE-VERSE |
| R/P PB MODE | O | MC-8 BOARD IC601 ㉒ | H | H | H | H | H | H | H | L | H | H |
| $\overline{\text{FEP}}$ | O | MC-8 BOARD IC601 ㉓ | H | H | H | H | H | H | H | L | H | H |
| ZOOM TEL | O | SK-8 BOARD IC601 ⑨ | L | L | L | L | L | L | L | L | L | L |
| ZOOM WIDE | O | SK-8 BOARD IC601 ⑰ | L | L | L | L | L | L | L | L | L | L |
| SP/$\overline{\text{LP}}$ | O | VI-7 BOARD IC107 ① | *5 | *5 | *5 | *5 | *5 | *2 | *5 | *1 | *1 | *2 |
| JOG | O | VI-7 BOARD IC107 ② | L | L | L | H | H | L | H | L | L | H |
| MP/$\overline{\text{ME}}$ | O | VI-7 BOARD IC107 ③ | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 |
| VA PB MODE | O | VI-7 BOARD IC107 ④ | L | L | L | H | H | H | H | L | L | H |
| CAM/$\overline{\text{LINE}}$ | O | VI-7 BOARD IC107 ⑤ | L*4 | L*4 | L*4 | L*4 | L*4 | L*4 | L*4 | L*4 | L*4 | L*4 |
| CAM REC | O | VI-7 BOARD IC107 ⑥ | L*4 | L*4 | L*4 | L | L | L | L | L*4 | L*4 | L |
| TALLY | O | VI-7 BOARD IC107 ⑦ | L | L | L | L | L | L | L | L*4 | L | L |
| $\overline{\text{VA PB MODE}}$ | O | VI-7 BOARD IC107 ⑧ | H | H | H | L | L | L | L | H | H | L |
| VIDEO MUTE | O | VI-7 BOARD IC107 ⑨ | L | L | L | L | L | L | L | L | L | L |
| AUDIO MUTE | O | VI-7 BOARD IC107 ⑪ | L | L | L | H | H | L | H | L | L | H |

*1. BY SP/LP SELECTOR
*2. BY RECORDED TAPE
*3. BY USING TAPE
*4. "H" WHEN " CAMERA POWER" IS ON
*5. HOLDS THE PREVIOUS LEVEL

## 3-11. MECHANISM CONTROL CPU – SERVO BLOCK INTERFACE (MC-8 BOARD)

| SIGNAL | I/O | REF. NO., PIN NO. | MODE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STOP | FF | REW | CUE | RE-VIEW | PB | PB·PAUSE | REC | REC·PAUSE | RE-VERSE |
| CAP FG | I | IC601 ㊴ | | | | | | | | | | |
| RF. SW PULSE | I | IC601 ㉔ | | | | | | | | | | |
| MONO MULTI | I | IC601 MATRIX IN 4 ㉟ | | | | | | | | | | |
| ATF LOCK | I | IC601 MATRIX IN 3 ㉞ | | | | | | | | | | |
| $\overline{\text{DRUM ON}}$ | O | IC601 ⑳ | H | L | L | L | L | L | L | L | L | L |
| $\overline{\text{CAP ON}}$ | O | IC601 ⑨ | H | L | L | L | L | L | H | L | H | L |
| CAP CW/$\overline{\text{CCW}}$ | O | IC601 ⑩ | L | L | H | L | H | L | L | L | L | H |
| D SERVO RESET | O | IC601 ㊼ | L | L | L | L | L | L | L | L | L | L |
| $\overline{\text{CAP PULSE}}$ | O | IC601 ㉖ | L | L | L | L | L | L | L | L | L | L |
| CUE + REVIEW | O | IC601 ㉗ | L | L | L | H | H | L | L | L | L | L |
| FG2 | O | IC601 ㊽ | L | H | H | L | H | L | L | L | L | L |
| FG4 | O | IC601 ① | L | L | L | L | H | L | L | L | L | L |
| FG8 | O | IC601 ② | L | H | H | H | L | L | L | L | L | L |
| SEL1 | O | IC601 ⑫ | | | | | | | | | | |
| SEL2 | O | IC601 ⑬ | | | | | | | | | | |
| TSA | O | IC601 ⑭ | | | | | | | | | | |
| TSB | O | IC601 ⑮ | | | | | | | | | | |

## 3-12. CAPSTAN SPEED SELECTOR (IC602) OPERATION (MC-8 BOARD)

| MODE / SIGNAL | SP | | | LP | | | FF/REW |
|---|---|---|---|---|---|---|---|
| | FWD | CUE | REV | FWD | CUE | REV | |
| **CFG (Hz) (IC602 ⑥ )** | 1340 | 12677 | 8900 | 670 | 6194 | 4577 | |
| **CAPFG (Hz) (IC602 ⑫ )** | 1340 | 1409 | 1271 | 670 | 688 | 654 | |
| **FG2 (IC602 ⑪ )** | L | L | H | L | L | H | H |
| **FG4 (IC602 ⑭ )** | L | L | H | L | L | H | L |
| **FG8 (IC602 ② )** | L | H | L | L | H | L | H |
| $\frac{\text{CFG}}{\text{CAPFG}}$ | 1/1 | 1/9 | 1/7 | 1/1 | 1/9 | 1/7 | 1/11 |

*1: The change in the dividing ratio of IC602 by the variation of signals FG2, FG4 and FG8.

## 3-13. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE

| SIGNAL | I/O | REF. NO., PIN NO. | STOP | FF | REW | CUE | REV | PB | PB・PAUSE | REC | REC・PAUSE | RVS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE SW *1 | I | MC-8 BOARD IC601 MATRIX IN | 3 | 6 | 6 | 1 | 5 | 1 | 1 | 1 | 1 | 5 |
| LOAD SW *2 | I | MC-8 BOARD IC601 MATRIX IN | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| CASSETTE LOCK SW | I | MC-8 BOARD IC601 MATRIX IN | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON |
| TAPE TOP | I | MC-8 BOARD IC601 MATRIX IN | NC | NC | H | H/NC | H | NC | NC | NC | H | H |
| TAPE END | I | MC-8 BOARD IC601 MATRIX IN | H/NC | H | NC | H | H | H | H | H | H | H |
| REEL TA | I | SK-8 BOARD IC601 MATRIX IN | | | | | | | | | | |
| REEL TB | I | SK-8 BOARD IC601 MATRIX IN | | | | | | | | | | |
| REEL S | I | SK-8 BOARD IC601 MATRIX IN | | | | | | | | | | |
| CM CONT (CW) | O | MC-8 BOARD IC601 ③ | L | L | L | L | L | L | L | L | L | L |
| CM CONT (CCW) | O | MC-8 BOARD IC601 ④ | L | L | L | L | L | L | L | L | L | L |
| LM CONT (CW) | O | MC-8 BOARD IC601 ⑤ | L | L | L | L | L | L | L | L | L | L |
| LM CONT (CCW) | O | MC-8 BOARD IC601 ⑥ | L | L | L | L | L | L | L | L | L | L |
| BRAKE START | O | MC-8 BOARD IC601 ⑦ | H | H | H | H | H | H | H | H | H | H |
| BRAKE HOLD | O | MC-8 BOARD IC601 ⑧ | H | L | L | H | L | H | H | H | H | L |
| TAPE T/E LED | O | MC-8 BOARD IC601 ㉑ | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 |

*1 REFER TO "MODE SWITCH PATTERN."
*2 REFER TO "LOADING SWITCH PATTERN."
*3 REGULAR PULSE

## 3-14. MODE SWITCH PATTERN

MODE SWITCH ROTATING DIRECTION
(↻) CW ← → CCW (↺)

| SWITCH POSITION (MODE) | | EJECT | | LOAD | | FF/REW | | STOP | | FWD | | RVS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWITCH PATTERN | 7 | 4 | 7 | 2 | 7 | 6 | 7 | 3 | 7 | 1 | 7 | 5 | 7 |
| MODE SW A | × | ○ | × | ○ | × | ○ | × | × | × | × | × | × | × |
| MODE SW B | × | ○ | × | × | × | × | × | × | × | ○ | × | ○ | × |
| MODE SW C | × | × | × | ○ | × | × | × | ○ | × | ○ | × | × | × |

○ . . . CLOSE , × . . . OPEN

## 3-15. LOADING SWITCH PATTERN

LOADING SWITCH ROTATING DIRECTION
(↺) CCW ← → CW(↻)

| SWITCH POSITION | LOADING TOP | | UNLOAD WAITE | | DRUM START | | T REEL START | | LOADING END |
|---|---|---|---|---|---|---|---|---|---|
| SWITCH PATTERN | 1 | 7 | 5 | 7 | 4 | 7 | 6 | 7 | 3 |
| LOAD SW A | × | × | × | × | ○ | × | ○ | × | × |
| LOAD SW B | ○ | × | ○ | × | ○ | × | × | × | × |
| LOAD SW C | ○ | × | × | × | × | × | × | × | ○ |

○ . . . CLOSE , × . . . OPEN

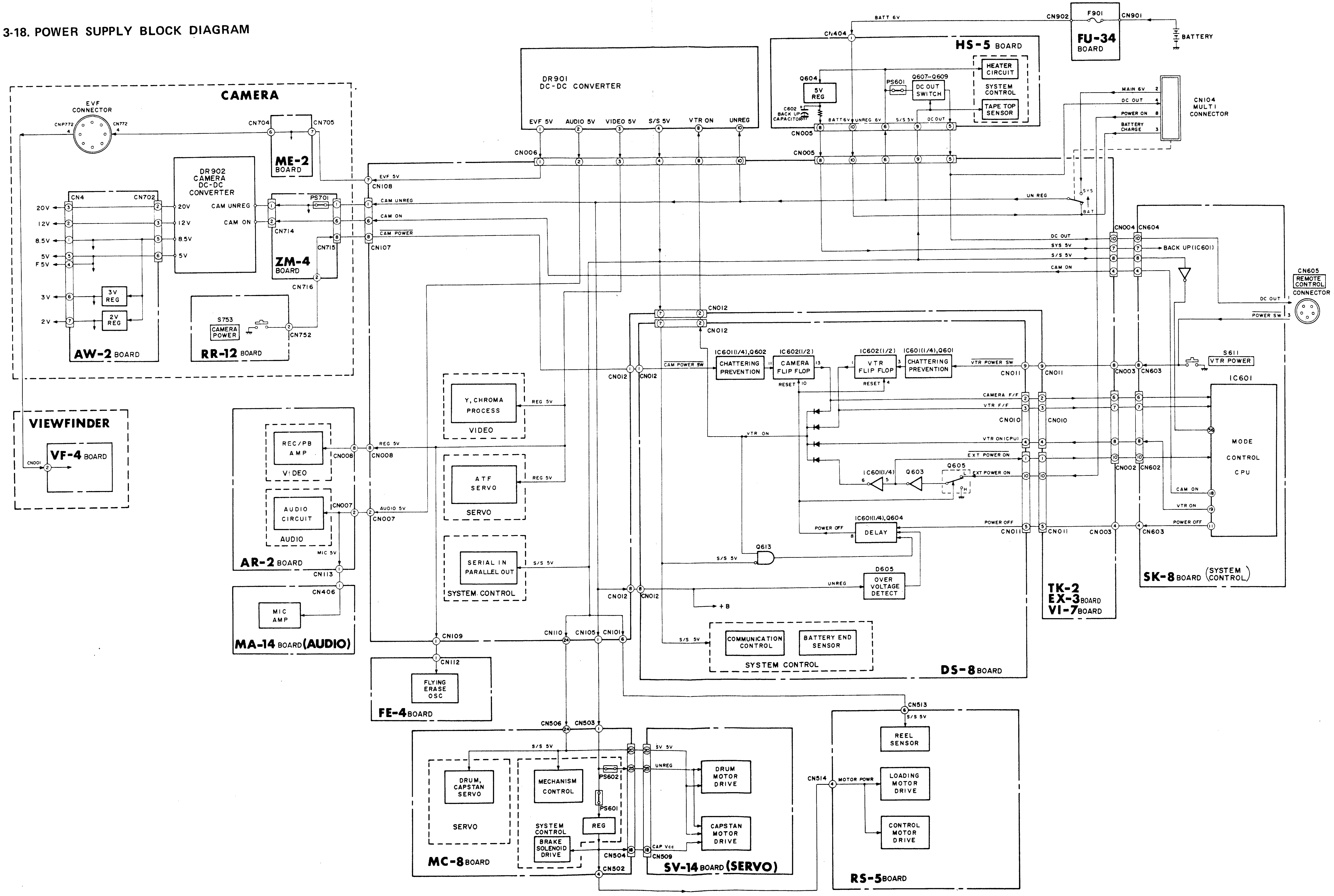
## 3-16. CAPSTAN SERVO OPERATION (MC-8 AND VI-7 BOARDS)

| | REC | PB |
|---|---|---|
| CSPDA (IC502 ⑮ ) | CAPSTAN SPEED ERROR | CAPSTAN SPEED ERROR |
| CPHDA (IC502 ⑯ ) | CAPSTAN PHASE ERROR | Held at approx. 2.0VDC |
| ATF ERROR (IC106 ㉕ ) | Held at approx. 2.5VDC | ATF ERROR |

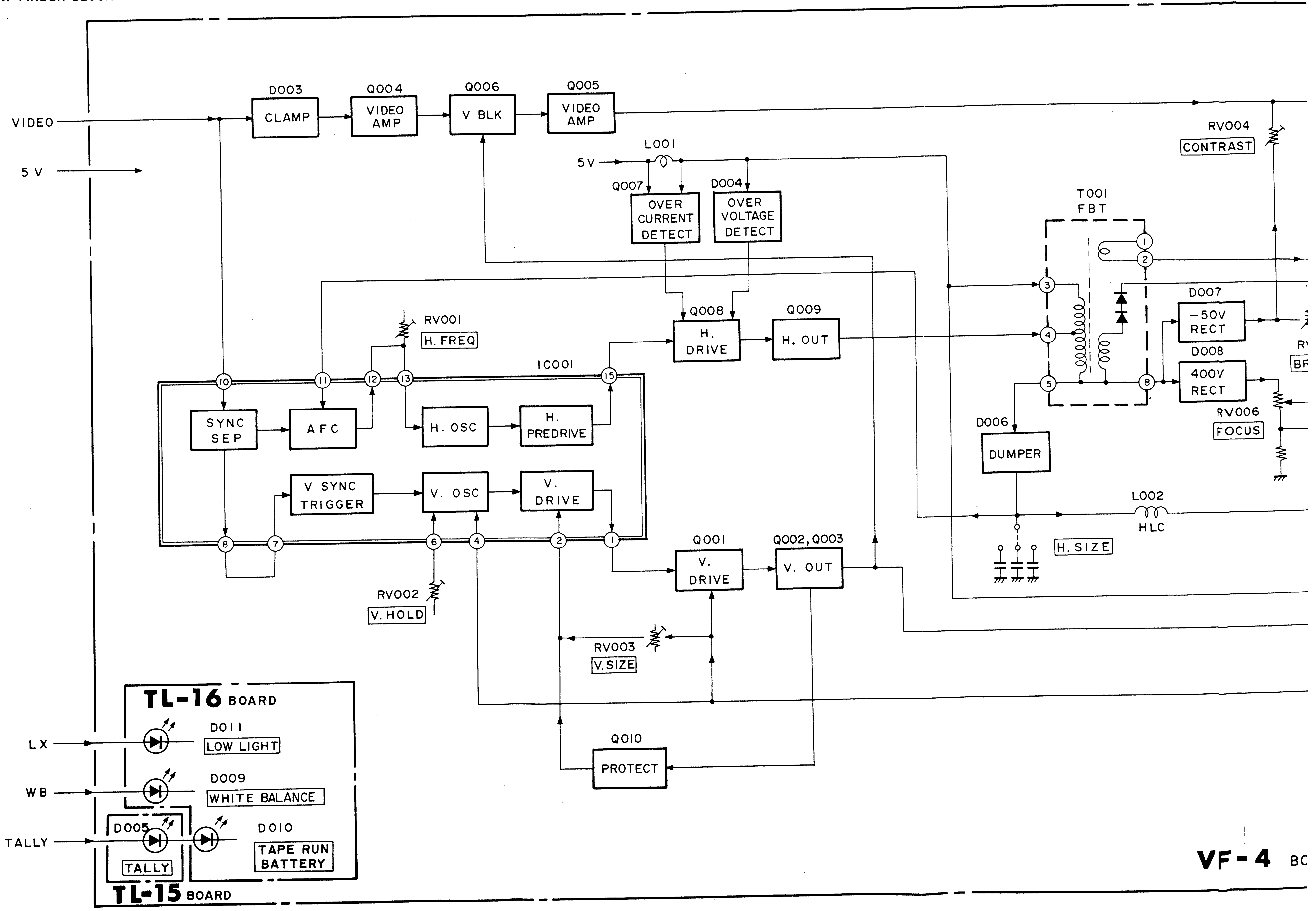
## 3-17. ATF SERVO PILOT SIGNAL (VI-7 BOARD)

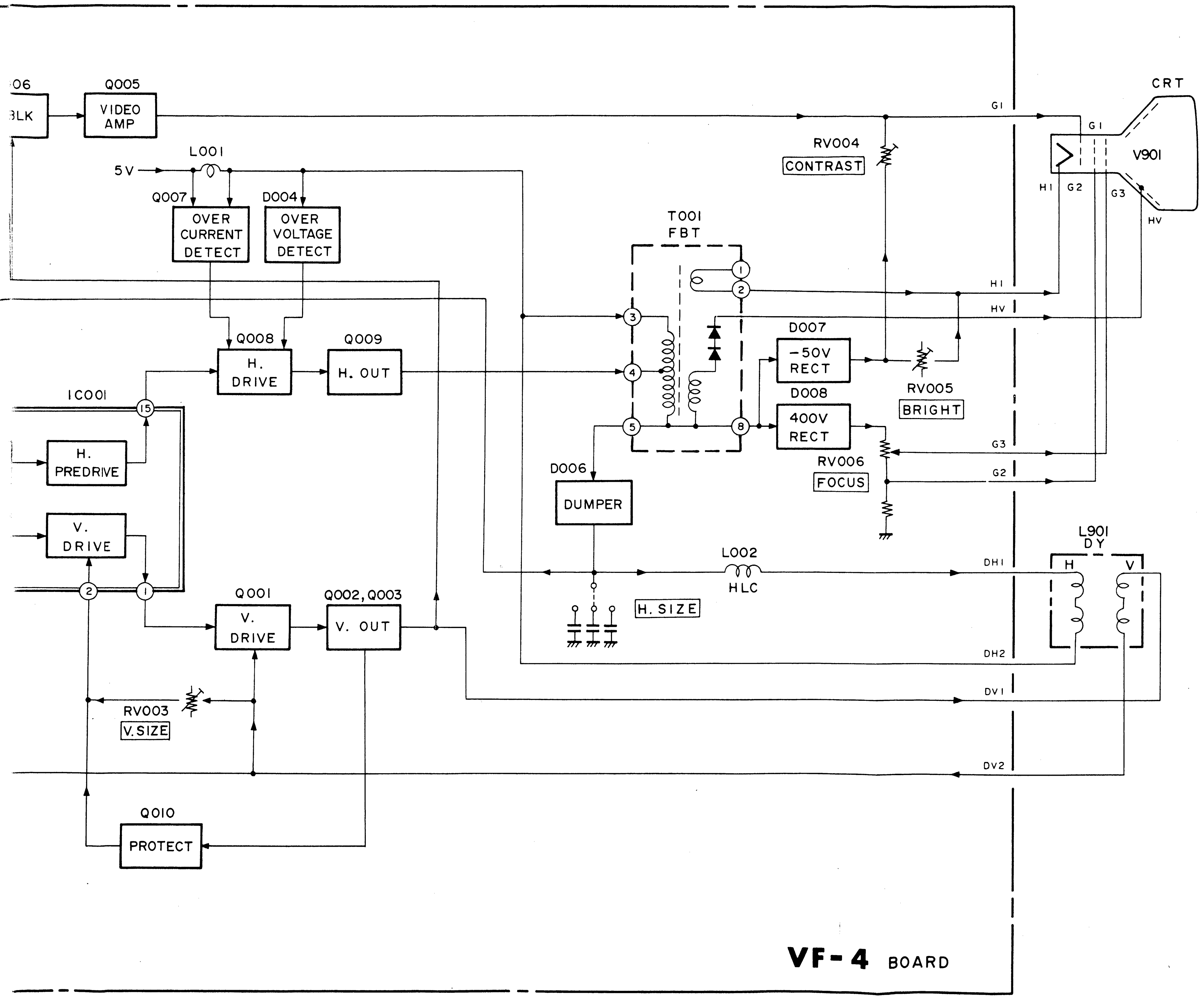
| PILOT SIGNAL (IC105 ⑦) | | CONTROL SIGNAL | |
|---|---|---|---|
| NAME | FREQUENCY | SEL 1 (IC105 ④) | SEL 2 (IC105 ⑤) |
| $f_1$ | 101.024 kHz (375/58 fH) | H | H |
| $f_2$ | 117.188 kHz (375/50 fH) | L | H |
| $f_3$ | 162.760 kHz (375/36 fH) | H | L |
| $f_4$ | 146.484 kHz (375/40 fH) | L | L |

## 3-18. POWER SUPPLY BLOCK DIAGRAM


CAMERA
EVF CONNECTOR
CNP772
CN772
CN704
CN705
ME-2 BOARD
DR902 CAMERA DC-DC CONVERTER
CAM UNREG
CAM ON
20V
12V
8.5V
5V
F5V
3V
2V
CN4
CN702
3V REG
2V REG
AW-2 BOARD
PS701
CN714
CN715
CN716
ZM-4 BOARD
S753
CAMERA POWER
CN752
RR-12 BOARD
VIEWFINDER
CN001
VF-4 BOARD
DR901 DC-DC CONVERTER
EVF 5V
AUDIO 5V
VIDEO 5V
S/S 5V
VTR ON
UNREG
CN006
EVF 5V
CN108
CAM UNREG
CAM ON
CAM POWER
CN107
BATT 6V
CN404
HS-5 BOARD
Q604
5V REG
C602 BACK UP CAPACITOR
PS601
Q607~Q609
DC OUT SWITCH
HEATER CIRCUIT
SYSTEM CONTROL
TAPE TOP SENSOR
BATT 6V
UNREG 6V
S/S 5V
DC OUT
CN005
CN902
F901
CN901
FU-34 BOARD
BATTERY
MAIN 6V
DC OUT
POWER ON
BATTERY CHARGE
CN104 MULTI CONNECTOR
UN REG
SYS
BAT
CN004
CN604
DC OUT
SYS 5V
S/S 5V
CAM ON
BACK UP (IC601)
CN605 REMOTE CONTROL CONNECTOR
DC OUT
POWER SW
S611
VTR POWER
IC601
MODE CONTROL CPU
CAM ON
VTR ON
POWER OFF
CN003
CN603
CN002
CN602
SK-8 BOARD (SYSTEM CONTROL)
CN012
IC601(1/4),Q602
CHATTERING PREVENTION
IC602(1/2)
CAMERA FLIP FLOP
RESET
IC602(1/2)
VTR FLIP FLOP
IC601(1/4),Q601
CHATTERING PREVENTION
CAM POWER SW
VTR POWER SW
CN011
CAMERA F/F
VTR F/F
CN010
VTR ON
VTR ON (CPU)
EXT POWER ON
IC601(1/4)
Q603
Q605
EXT POWER ON
IC601(1/4),Q604
DELAY
POWER OFF
Q613
S/S 5V
D605
OVER VOLTAGE DETECT
UNREG
+B
TK-2
EX-3 BOARD
VI-7 BOARD
S/S 5V
COMMUNICATION CONTROL
BATTERY END SENSOR
SYSTEM CONTROL
DS-8 BOARD
Y, CHROMA PROCESS
VIDEO
REG 5V
ATF SERVO
SERVO
REG 5V
SERIAL IN PARALLEL OUT
SYSTEM CONTROL
S/S 5V
REC/PB AMP
VIDEO
CN008
REG 5V
AUDIO CIRCUIT
AUDIO
CN007
AUDIO 5V
MIC 5V
AR-2 BOARD
CN113
CN406
MIC AMP
MA-14 BOARD (AUDIO)
CN109
CN112
FLYING ERASE OSC
FE-4 BOARD
CN110
CN105
CN101
CN513
S/S 5V
REEL SENSOR
CN514
MOTOR POWR
LOADING MOTOR DRIVE
CONTROL MOTOR DRIVE
RS-5 BOARD
CN506
CN503
S/S 5V
DRUM, CAPSTAN SERVO
SERVO
MECHANISM CONTROL
PS602
PS601
REG
SYSTEM CONTROL
BRAKE SOLENOID DRIVE
CN504
CN502
MC-8 BOARD
5V
UNREG
CAP Vcc
CN509
DRUM MOTOR DRIVE
CAPSTAN MOTOR DRIVE
SV-14 BOARD (SERVO)

### 3-19. VIEW FINDER BLOCK DIAGRAM


VIDEO
5 V
D003
CLAMP
Q004
VIDEO AMP
Q006
V BLK
Q005
VIDEO AMP
RV004
CONTRAST
L001
5 V
Q007
OVER CURRENT DETECT
D004
OVER VOLTAGE DETECT
T001
FBT
D007
-50V RECT
D008
400V RECT
RV006
FOCUS
RV
BR
Q008
H. DRIVE
Q009
H. OUT
RV001
H. FREQ
IC001
SYNC SEP
AFC
H. OSC
H. PREDRIVE
V SYNC TRIGGER
V. OSC
V. DRIVE
D006
DUMPER
L002
HLC
H. SIZE
Q001
V. DRIVE
Q002, Q003
V. OUT
RV002
V. HOLD
RV003
V. SIZE
Q010
PROTECT
TL-16 BOARD
D011
LOW LIGHT
D009
WHITE BALANCE
D005
TALLY
D010
TAPE RUN BATTERY
TL-15 BOARD
LX
WB
TALLY
VF-4 BC


06
BLK
Q005
VIDEO AMP
L001
5V
Q007
OVER CURRENT DETECT
D004
OVER VOLTAGE DETECT
Q008
H. DRIVE
Q009
H. OUT
IC001
15
H. PREDRIVE
V. DRIVE
2
1
Q001
V. DRIVE
Q002, Q003
V. OUT
RV003
V.SIZE
Q010
PROTECT
T001
FBT
1
2
3
4
5
8
D007
−50V RECT
D008
400V RECT
D006
DUMPER
L002
HLC
H. SIZE
RV004
CONTRAST
RV005
BRIGHT
RV006
FOCUS
G1
H1
HV
G3
G2
DH1
DH2
DV1
DV2
CRT
V901
G1
H1
G2
G3
HV
L901
DY
H
V
VF-4 BOARD

## 3-20. TIMING GENERATOR (IC707) TERMINAL FUNCTIONS (CP-11 BOARD)

| Pin No. | Pin Name | I/O | Function |
|---|---|---|---|
| 1 | SP1 | O | Sampling hold pulse for colour separation |
| 2 | SHD | O | Sampling hold pulse for imager output |
| 3 | SHP | O | Sampling hold pulse for imager output |
| 4 | XV4 | O | Imager drive pulse |
| 5 | XV2 | O | Imager drive pulse |
| 6 | Vss |  | Power supply |
| 7 | HTSG | I | Test signal input (GND) |
| 8 | XV3 | O | Imager drive pulse |
| 9 | XV1 | O | Imager drive pulse |
| 10 | XSG2 | O | Imager drive pulse |
| 11 | XSG1 | O | Imager drive pulse |
| 12 | XPG | O | Imager drive pulse |
| 13 | XH2 | O | Imager drive pulse |
| 14 | XH1 | O | Imager drive pulse |
| 15 | A2 | O | External ROM address output |
| 16 | A1 | O | External ROM address output |
| 17 | A0 | O | External ROM address output |
| 18 | A3 | O | External ROM address output |
| 19 | VDD |  | Power supply |
| 20 | A4 | O | External ROM address output |
| 21 | A5 | O | External ROM address output |
| 22 | A6 | O | External ROM address output |
| 23 | CM | I | Test signal input (GND) |
| 24 | D4 | I | ROM data input |
| 25 | D3 | I | ROM data input |
| 26 | D2 | I | ROM data input |
| 27 | D1 | I | ROM data input |
| 28 | XVCT | O | Modulation pulse for ROM power supply |
| 29 | TEST | I | Test signal input (GND) |
| 30 | CP | I | Clock input |
| 31 | Vss |  | Power supply |
| 32 | XCK | O | Waveform shaper output |
| 33 | CK | I | Waveform shaper input |
| 34 | FLD | I | Frame sync signal |
| 35 | HD | I | Horizontal sync signal |
| 36 | CL | O | Clock output for CX7930 |
| 37 | VAA | O | Vertical preblanking signal |
| 38 | HBLK | O | Horizontal preblanking signal |
| 39 | ID | O | ID signal for line sequential scan signal |
| 40 | CLP3 | O | Clamping pulse |
| 41 | CLP2 | O | Clamping pulse |
| 42 | CLP1 | O | Clamping pulse |
| 43 | VDD |  | Power supply |
| 44 | XDL2 | O | CCD delay-line drive pulse |
| 45 | XDL1 | O | CCD delay-line drive pulse |
| 46 | SH2 | O | CCD delay-line sampling hold pulse |
| 47 | SH1 | O | CCD delay-line sampling hold pulse |
| 48 | SP2 | O | Sampling hold pulse for colour separation |

## 3-21. SYNC GENERATOR (IC708) TERMINAL FUNCTIONS (CP-11 BOARD)

| Pin No. | Pin Name | I/O | Function |
|---|---|---|---|
| 1 | VRI | I | Vertical reset input |
| 2 | OFLD1 | O | First field output |
| 3 | OBF/COLB | O | Burst flag/colour blanking output |
| 4 | OSYNC | O | Composite sync signal output |
| 5 | OFLD | O | Even/odd field select output |
| 6 | OBLK | O | Composite blanking signal output |
| 7 | OLALT | O | Line select output |
| 8 | OHD | O | Horizontal drive output |
| 9 | 4*f*sc OUT | O | 4*f*sc output |
| 10 | 4*f*sc IN | I | 4*f*sc input |
| 11 | NC |  |  |
| 12 | OVD | O | Vertical drive output |
| 13 | NC |  |  |
| 14 | Vss |  | GND terminal |
| 15 | LALTRI | I | Line select reset input |
| 16 | TEST | I | Test input |
| 17 | NC |  |  |
| 18 | NC |  |  |
| 19 | OSC | O | Subcarrier output |
| 20 | EXT | I | Internal/external mode select |
| 21 | MODE1 | I | System select input-1 |
| 22 | MODE2 | I | System select input-2 |
| 23 | HRI | I | Horizontal reset input |
| 24 | H COM OUT | O | Phase comparator output |
| 25 | CL OUT | O | Clock output |
| 26 | CL IN | I | Clock input |
| 27 | OFH | O | Horizontal drive frequency output |
| 28 | VDD |  | Power supply terminal (IC board) |

## 3-22. MODE CONTROL CPU (IC601) TERMINAL FUNCTIONS (SK-8 BOARD)

| Pin No. | Pin Name | I/O | Function |
|---|---|---|---|
| 1 | NC | | |
| 2 | MATRIX OUT control-C | O | Output for matrix decoder |
| 3 | MATRIX OUT control-B | O | Output for matrix decoder |
| 4 | MATRIX OUT control-A | O | Output for matrix decoder |
| 5 | SI | I | Serial input data on inner bus |
| 6 | SO | O | Serial output data on inner bus |
| 7 | $\overline{\text{SCK}}$ | I/O | Inner bus clock |
| 8 | START | O | Communication-CPU start flag output |
| 9 | ZOOM TEL | O | Camera zooming-in control |
| 10 | LED STB | O | Data strobe for LED display serial-in/parallel-out (CX7991) |
| 11 | POWER OFF | O | Power-off control |
| 12 | MECHACON CS | O | High while communicating with mechanism-control CPU |
| 13 | VA S/P STB | O | Data strobe for audio/video serial-in/parallel-out (CX7991) |
| 14 | Not used | | |
| 15 | $\overline{\text{D SERVO CS}}$ | O | High while communicating with servo IC (CX20035) |
| 16 | SYSTEM RESET | O | Output to reset system when power supply goes on |
| 17 | ZOOM WIDE | O | Camera zooming-out control |
| 18 | CAM ON | O | Camera power supply (camera D/D CON) control signal |
| 19 | VTR ON | O | High while VTR power supply is on |
| 20 | X2 | | Not used |
| 21 | X1 | (I) | Not used |
| 22 | V$_{ss}$ | I | GND |
| 23 | VLC$_3$ | O | LCD drive voltage control |
| 24 | VLC$_2$ | O | LCD drive voltage control |
| 25 | VLC$_1$ | O | LCD drive voltage control |
| 26 | V$_{DD}$ | I | SYS 5V (unswitched) |
| 27 | COM3 | O | LCD common signal output |
| 28 | COM2 | O | LCD common signal output |
| 29 | COM1 | O | LCD common signal output |
| 30 | COM0 | O | LCD common signal output |
| 31<br>\|<br>44 | Not used | | |
| 45 | S9 | O | LCD segment signal output |
| 46 | S8 | O | LCD segment signal output |
| 47 | S7 | O | LCD segment signal output |
| 48 | S6 | O | LCD segment signal output |
| 49 | S5 | O | LCD segment signal output |
| 50 | S4 | O | LCD segment signal output |
| 51 | S3 | O | LCD segment signal output |
| 52 | S2 | O | LCD segment signal output |
| 53 | S1 | O | LCD segment signal output |
| 54 | S0 | O | LCD segment signal output |
| 55 | INIT1 | I | An external interruption request (SYSTEM SYNC input) from the servo IC (CX20035). |
| 56 | RESET | I | Mode control reset |
| 57 | CL1 | I | External system clock input |
| 58 | V$_{DD}$ | I | SYS 5V (unswitched) |
| 59 | Not used | | |
| 60 | SCAN IN D | I | Matrix input |
| 61 | SCAN IN C | I | Matrix input |
| 62 | SCAN IN B | I | Matrix input |
| 63 | SCAN IN A | I | Matrix input |
| 64 | MATRIX OUT control-D | I | Output for matrix decoder |

### 3-23. MECHANISM CONTROL CPU (IC601) TERMINAL FUNCTIONS (MC-8 BOARD)

| Pin No. | Pin Name | I/O | Function |
|---|---|---|---|
| 1 | FG4 | O | Capstan FG count-down by 1/4 |
| 2 | FG8 | O | Capstan FG count-down by 1/8 |
| 3 | CM CONT (CW) | O | Control-motor revolution (clockwise/counterclockwise) control CW |
| 4 | CM CONT (CCW) | O | Control-motor revolution (clockwise/counterclockwise) control CCW |
| 5 | LM CONT (CW) | O | Loading-motor revolution (clockwise/counterclockwise) control CW |
| 6 | LM CONT (CCW) | O | Loading-motor revolution (clockwise/counterclockwise) control CCW |
| 7 | $\overline{\text{BRAKE START}}$ | O | Main brake start control |
| 8 | $\overline{\text{BRAKE HOLD}}$ | O | Main brake hold control |
| 9 | $\overline{\text{CAP ON}}$ | O | Capstan-on control |
| 10 | CAP CW/$\overline{\text{CCW}}$ | O | Capstan revolution (clockwise/counterclockwise) control |
| 11 | NC | | |
| 12 | SEL 1 | O | ATF pilot select-1 |
| 13 | SEL 2 | O | ATF pilot select-2 |
| 14 | TS A | O | ATF error voltage hold |
| 15 | TS B | O | ATF lock hold |
| 16 | NC | | |
| 17 | NC | | |
| 18 | S/S 5V | I | S/S 5V power supply (Switched) |
| 19 | NC | | |
| 20 | $\overline{\text{DRUM ON}}$ | O | Drum-on control |
| 21 | $\overline{\text{TAPE T/E LED}}$ | O | Top/end-of-tape LED control |
| 22 | RP PB MODE | O | RP amplifier control |
| 23 | $\overline{\text{FEP}}$ | O | Flying erase-head control |
| 24 | RF SW P | I | RF switching pulse input |
| 25 | MECHACON CS | I | Mode-control-CPU communication request |
| 26 | $\overline{\text{CAP PULSE}}$ | O | Capstan drive voltage maximizing signal |
| 27 | CUE + REVIEW | O | High for cue/review operation |
| 28 | $\overline{\text{MATRIX OUT 1}}$ | O | Matrix output |
| 29 | $\overline{\text{MATRIX OUT 2}}$ | O | Matrix output |
| 30 | NC | | |
| 31 | $\overline{\text{MATRIX OUT 3}}$ | O | Matrix output |
| 32 | MATRIX IN 1 | I | Matrix input |
| 33 | MATRIX IN 2 | I | Matrix input |
| 34 | MATRIX IN 3 | I | Matrix input |
| 35 | MATRIX IN 4 | I | Matrix input |
| 36 | EX | I | Clock generator input |
| 37 | X | O | Clock generator output |
| 38 | $\overline{\text{RESET}}$ | I | Mechanism-control-CPU reset signal ($\overline{\text{system reset}}$) issued from mode-control CPU |
| 39 | FG | I | Capstan FG input |
| 40 | NC | | |
| 41 | NC | | |
| 42 | GND | | GND |
| 43 | NC | | |
| 44 | SCK | O | 8 clock output connected to inner-bus SCK line when MECHACONCS is at High. |
| 45 | SO | I | Input terminal of serial data from mode-control CPU, which is connected to inner-bus SO line |
| 46 | SI | O | Output terminal of serial data to mode-control CPU, which is connected to inner-bus SI line |
| 47 | D SERVO RESET | O | Reset signal for servo control IC (CX20035) |
| 48 | FG 2 | O | Capstan FG count-down by 1/2 |

## 3-24. COMMUNICATION CONTROL CPU (IC603) TERMINAL FUNCTIONS (DS-8 BOARD)

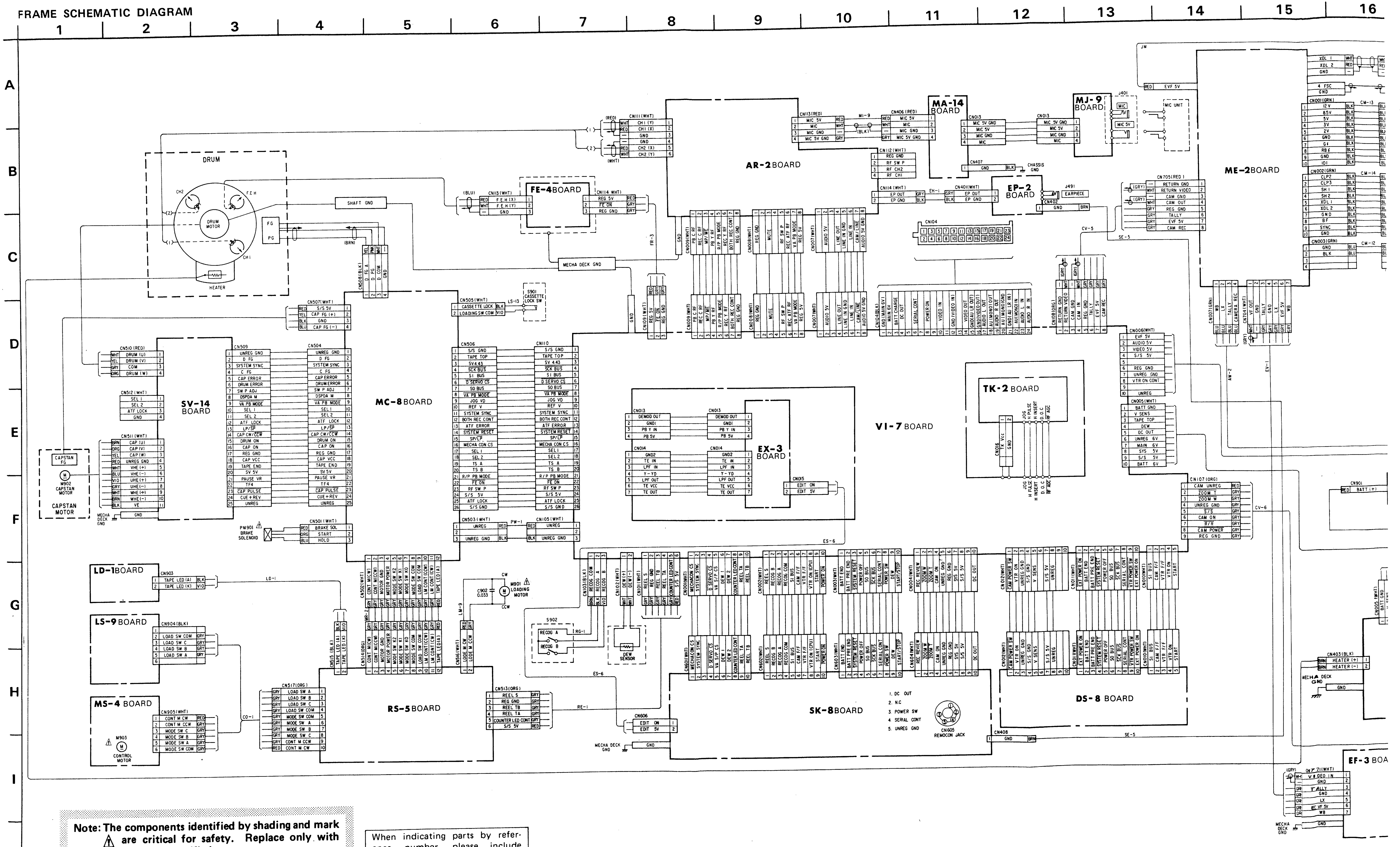
| Pin No. | Pin Name | I/O | Function |
|---|---|---|---|
| 1 | SCK EN | O | Clock output enable |
| 2 | $\overline{\text{SCK OUT}}$ | O | Clock issued to inner bus |
| 3 | INVALID FLAG | O | Not used |
| 4 | START FLAG | I | Communication start from mode-control CPU |
| 5 | MODE | I | Open |
| 6 | X | O | Clock generator output |
| 7 | EX | I | Clock generator input |
| 8 | Vss | I | GND |
| 9 | VTR AREA | O | Data communication time at High (Inner bus → External bus) |
| 10 | CAM/TT AREA | O | Data communication time at High (External bus → Inner bus) |
| 11 | TT AREA | O | Not used |
| 12 | CAM AREA | O | Not used |
| 13 | START BIT | O | Start bit on external CTRL-L bus |
| 14 | CAM CS | | Not used |
| 15 | $\overline{\text{SYSTEM RESET}}$ | I | Communication control CPU reset issued from mode-control CPU |
| 16 | Vcc | | S/S 5V power supply |

## 3-25. SERIAL-IN/PARALLEL-OUT FOR AUDIO/VIDEO SIGNAL (IC107) TERMINAL FUNCTIONS (VI-7 BOARD)

| Pin No. | Pin Name | I/O | Function |
|---|---|---|---|
| 1 | SP/$\overline{\text{LP}}$ (P1) | O | SP/$\overline{\text{LP}}$ mode select signal |
| 2 | JOG (P2) | O | JOG mode |
| 3 | MP/$\overline{\text{ME}}$ (P3) | O | Type-of-tape select |
| 4 | VA PB MODE (P4) | O | Playback mode (High) |
| 5 | CAM/$\overline{\text{LINE}}$ (P5) | O | Camera/line select |
| 6 | CAM REC (P6) | O | Camera recording mode signal issued to camera |
| 7 | TALLY (P7) | O | Tally LED |
| 8 | $\overline{\text{VA PB MODE}}$ (P8) | O | Playback mode (Low) |
| 9 | VIDEO MUTE (P9) | O | Video mute control |
| 10 | Vss | | GND |
| 11 | AUDIO MUTE (P10) | O | Audio mute control |
| 12 | (P11) | O | Not used |
| 13 | SYS RESET (P12) | O | System reset output |
| 14 | SO | | Not used |
| 15 | $\overline{\text{SET}}$ | | Connected to $V_{DD}$ |
| 16 | $\overline{\text{RESET}}$ | | Connected to $V_{DD}$ |
| 17 | STB | I | If is connected to the V/A SP STB (strobe) coming from the mode control CPU, and it latches the data to the internal resistor at "H". |
| 18 | SI (DATA) | I | Input terminal of serial data from mode-control CPU, which is connected to inner bus SO line |
| 19 | CLK | I | Clock input from mode-control CPU, which is connected to inner bus SCK line |
| 20 | $V_{DD}$ | | S/S 5V |

## SECTION 4
## SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

### FRAME SCHEMATIC DIAGRAM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16
A
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C
D
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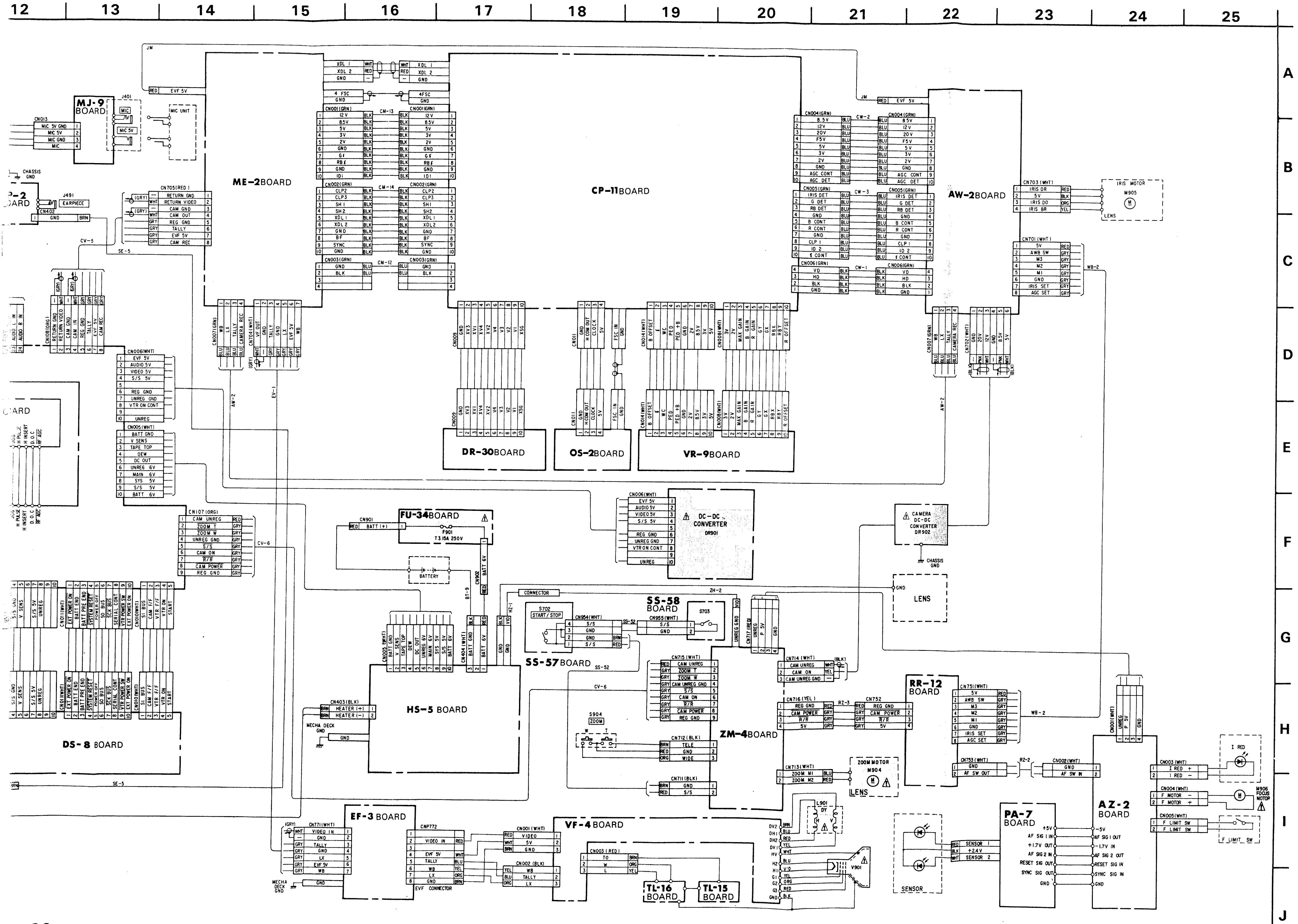
G
H
I
J
DRUM
DRUM MOTOR
HEATER
SHAFT GND
FE-4 BOARD
AR-2 BOARD
MA-14 BOARD
MJ-9 BOARD
MIC UNIT
EP-2 BOARD
EARPIECE
ME-2 BOARD
CM-13
CM-14
CM-12
SV-14 BOARD
MC-8 BOARD
CAPSTAN MOTOR
M902
MECHA DECK GND
BRAKE SOLENOID
PM901
S901 CASSETTE LOCK SW
EX-3 BOARD
VI-7 BOARD
TK-2 BOARD
LD-1 BOARD
LS-9 BOARD
MS-4 BOARD
M903 CONTROL MOTOR
RS-5 BOARD
M901 LOADING MOTOR
S902
RECOG A
RECOG B
DEW SENSOR
SK-8 BOARD
CN605 REMOCON JACK
1. DC OUT
2. NC
3. POWER SW
4. SERIAL CONT
5. UNREG GND
DS-8 BOARD
EF-3 BOA
MECHA DECK GND
CV-5
CV-6
SE-5
ES-6
RE-1
CO-1
LD-1
LM-9
PW-1
FR-3
EH-1
MI-9
AW-2
EV-1
RG-1

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

When indicating parts by reference number, please include the board name.


12
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18
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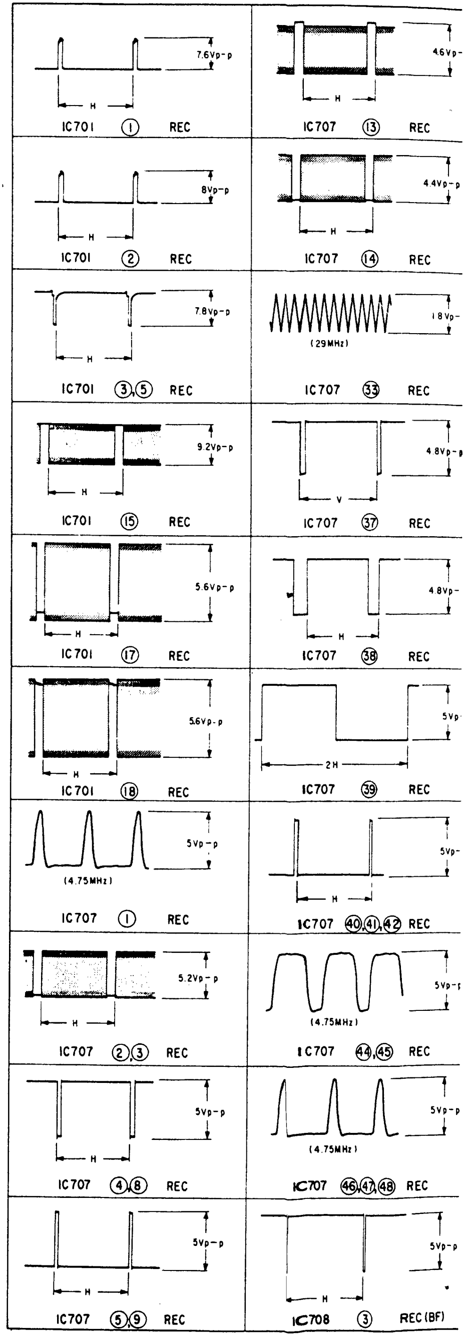
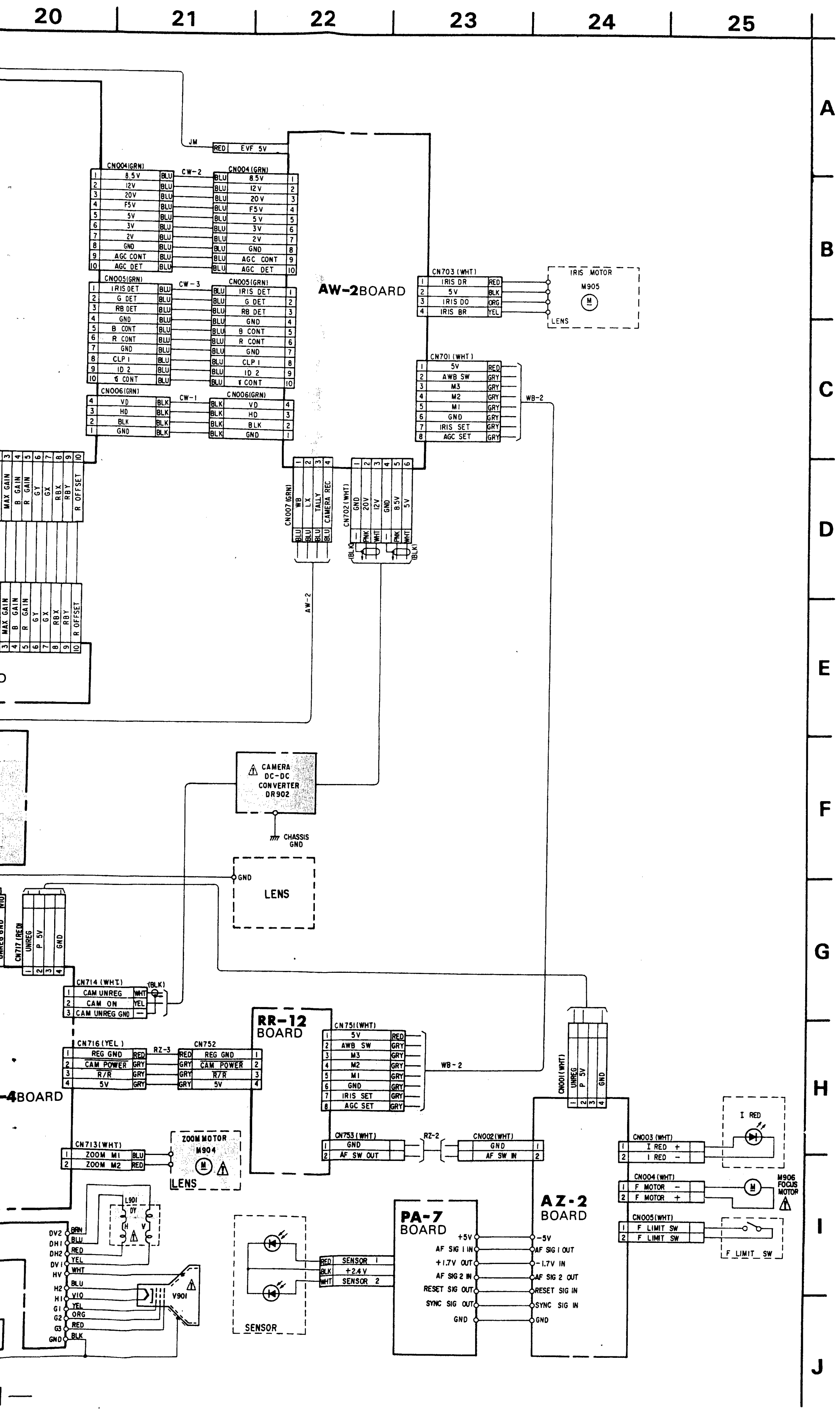
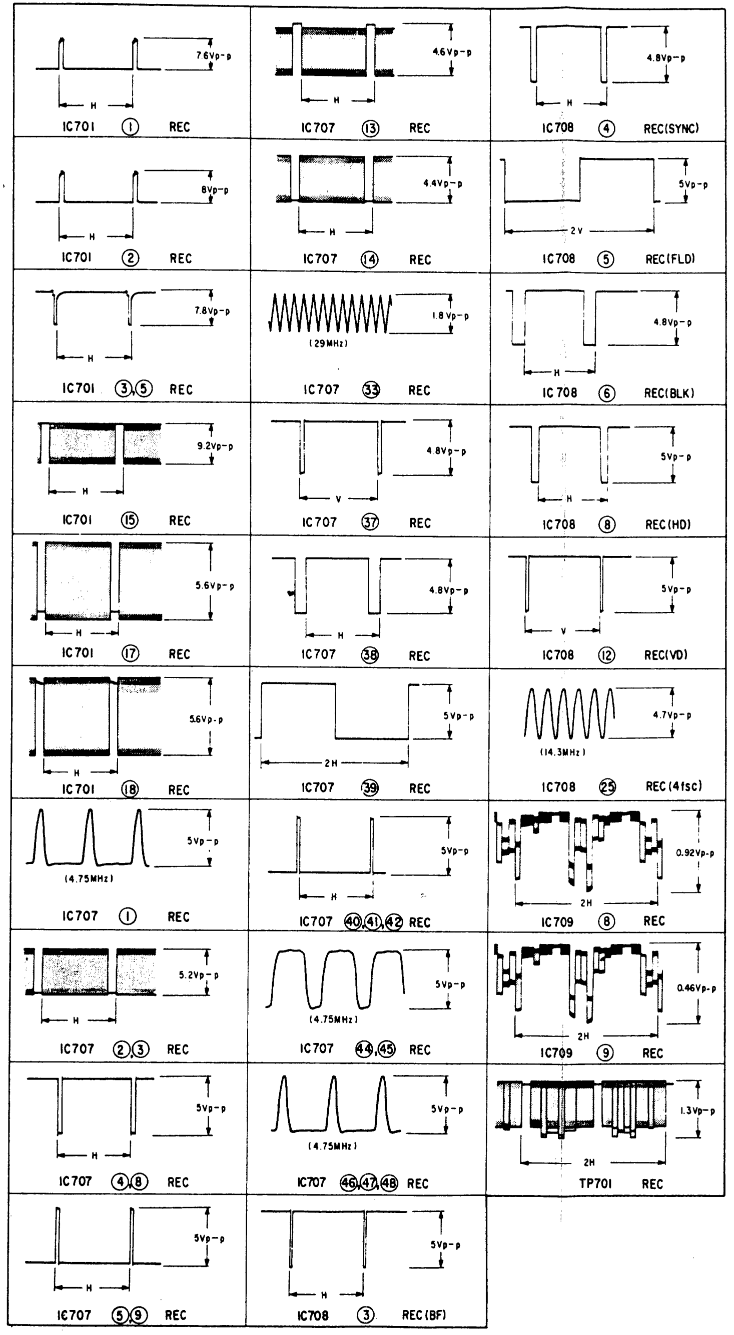
A
B
C
D
E
F
G
H
I
J
MJ-9 BOARD
ME-2 BOARD
CP-11 BOARD
AW-2 BOARD
DR-30 BOARD
OS-2 BOARD
VR-9 BOARD
DC-DC CONVERTER DR901
CAMERA DC-DC CONVERTER DR902
FU-34 BOARD
F901 T3.15A 250V
BATTERY
SS-58 BOARD
SS-57 BOARD
HS-5 BOARD
DS-8 BOARD
ZM-4 BOARD
RR-12 BOARD
LENS
ZOOM MOTOR M904
IRIS MOTOR M905
EF-3 BOARD
VF-4 BOARD
TL-16 BOARD
TL-15 BOARD
PA-7 BOARD
AZ-2 BOARD
SENSOR
M906 FOCUS MOTOR
I RED
F LIMIT SW
S702 START/STOP
S703
S904 ZOOM
L901 DY
V901
J401 MIC UNIT
J491 EARPIECE
CHASSIS GND
MECHA DECK GND
EVF CONNECTOR
CONNECTOR
CM-13
CM-14
CM-12
CW-2
CW-3
CW-1
CV-5
CV-6
SE-5
SS-52
ZH-2
RZ-3
RZ-2
WB-2
BT-9
EV-1
AW-2
JM

## CP-11 BOARD (CAMERA)

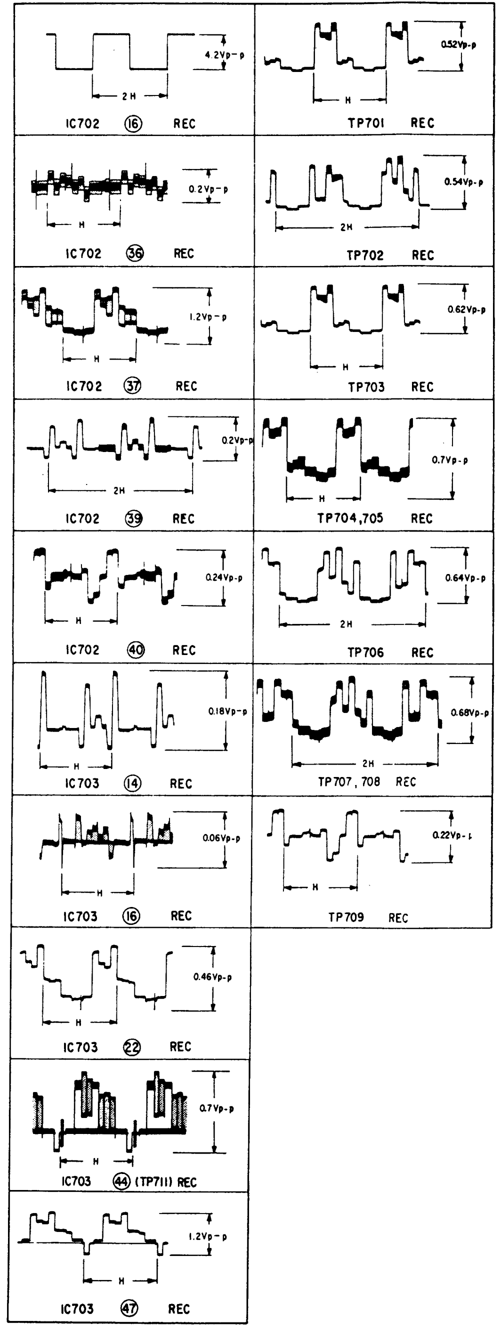



20
21
22
23
24
25
A
B
C
D
E
F
G
H
I
J
JM
RED EVF 5V
AW-2BOARD
CN004(GRN)
1 8.5V BLU
2 12V BLU
3 20V BLU
4 F5V BLU
5 5V BLU
6 3V BLU
7 2V BLU
8 GND BLU
9 AGC CONT BLU
10 AGC DET BLU
CW-2
CN005(GRN)
1 IRIS DET BLU
2 G DET BLU
3 RB DET BLU
4 GND BLU
5 B CONT BLU
6 R CONT BLU
7 GND BLU
8 CLP 1 BLU
9 ID 2 BLU
10 ɣ CONT BLU
CW-3
CN006(GRN)
4 VD BLK
3 HD BLK
2 BLK BLK
1 GND BLK
CW-1
CN703 (WHT)
1 IRIS DR RED
2 5V BLK
3 IRIS DO ORG
4 IRIS BR YEL
IRIS MOTOR
M905
LENS
CN701 (WHT)
1 5V RED
2 AWB SW GRY
3 M3 GRY
4 M2 GRY
5 M1 GRY
6 GND GRY
7 IRIS SET GRY
8 AGC SET GRY
WB-2
MAX GAIN
B GAIN
R GAIN
GY
GX
RBX
RBY
R OFFSET
CN007 (GRN)
WB
LX
TALLY
CAMERA REC
CN702 (WHT)
GND
20V
12V
GND
8.5V
5V
(BLK)
PNK
WHT
AW-2
CAMERA DC-DC CONVERTER DR902
CHASSIS GND
GND
LENS
CN717 (RED)
UNREG
P 5V
GND
CN714 (WHT)
1 CAM UNREG WHT
2 CAM ON YEL
3 CAM UNREG GND
(BLK)
CN716 (YEL)
1 REG GND RED
2 CAM POWER GRY
3 R/R GRY
4 5V GRY
RZ-3
CN752
1 REG GND
2 CAM POWER
3 R/R
4 5V
-4BOARD
RR-12 BOARD
CN751 (WHT)
1 5V RED
2 AWB SW GRY
3 M3 GRY
4 M2 GRY
5 M1 GRY
6 GND GRY
7 IRIS SET GRY
8 AGC SET GRY
WB-2
CN713 (WHT)
1 ZOOM M1 BLU
2 ZOOM M2 RED
ZOOM MOTOR
M904
LENS
CN753 (WHT)
1 GND
2 AF SW OUT
RZ-2
CN002 (WHT)
GND 1
AF SW IN 2
CN001 (WHT)
UNREG
P 5V
GND
L901
DY
H
V
DV2 BRN
DH1 BLU
DH2 RED
DV1 YEL
HV WHT
H2 BLU
H1 VIO
G1 YEL
G2 ORG
G3 RED
GND BLK
V901
SENSOR
RED SENSOR 1
BLK +2.4V
WHT SENSOR 2
PA-7 BOARD
+5V
AF SIG 1 IN
+1.7V OUT
AF SIG 2 IN
RESET SIG OUT
SYNC SIG OUT
GND
AZ-2 BOARD
-5V
AF SIG 1 OUT
-1.7V IN
AF SIG 2 OUT
RESET SIG IN
SYNC SIG IN
GND
CN003 (WHT)
1 I RED +
2 I RED −
I RED
CN004 (WHT)
1 F MOTOR −
2 F MOTOR +
M906 FOCUS MOTOR
CN005 (WHT)
1 F LIMIT SW
2 F LIMIT SW
F LIMIT SW

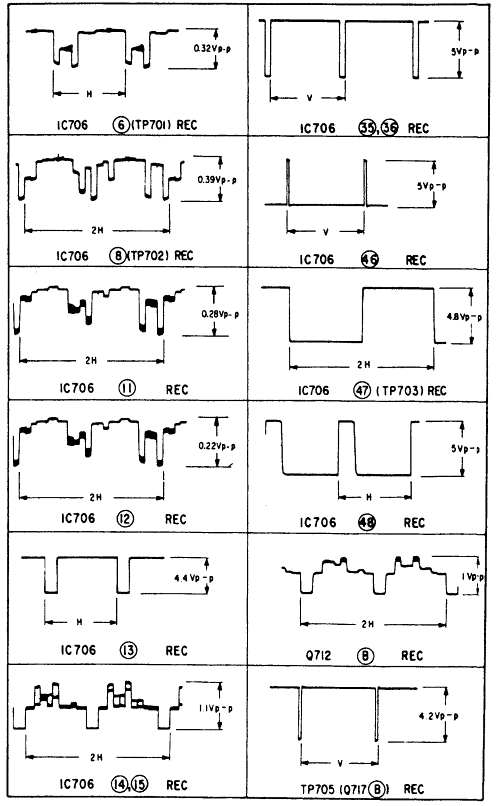
**CP-11** BOARD (CAMERA)



**ME-2** BOARD (CAMERA)



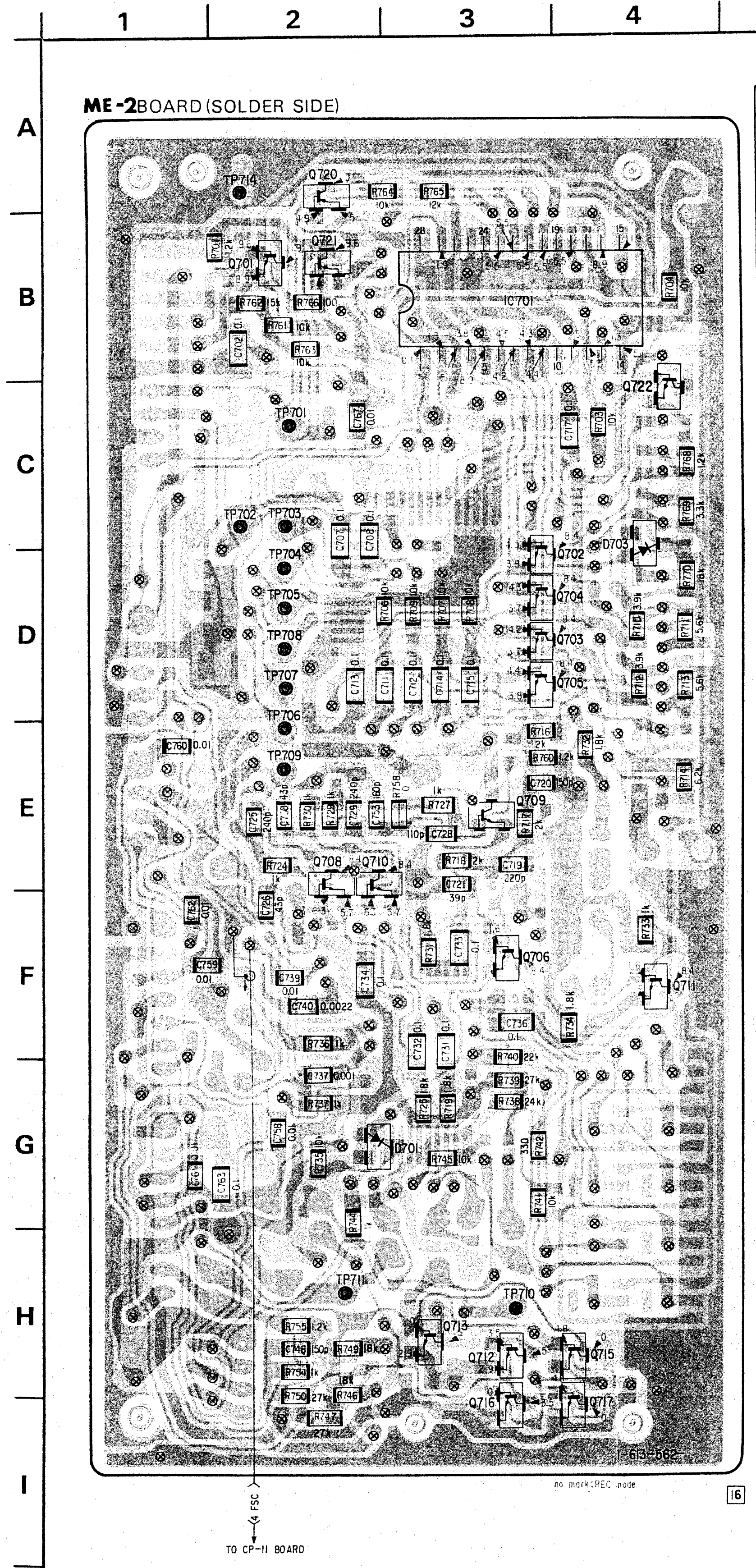
**AW-2** BOARD (CAMERA)



# CAMERA (1)

## ZM-4 (ZOOM MOTOR DRIVE), RR-12 (SWITCH), ME-2 (MATRIX/ENCODER), EF-3 (EVF CONNECTOR), AZ-2 (MOTOR DRIVE, AUTO FOCUS PROCESS), PA-7 (IRED), SS-58 (SWITCH), SS-57 (SWITCH) PRINTED WIRING BOARDS

– Ref. No. AZ-2, SS-57, SS-58 BOARD : 1000 series, ME-2 BOARD : 3000 series, FE-3 BOARD : 5000 series, PA-7 BOARD : 6000 series, AM-4, RR-12 BOARD : 7000 series –


1
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A
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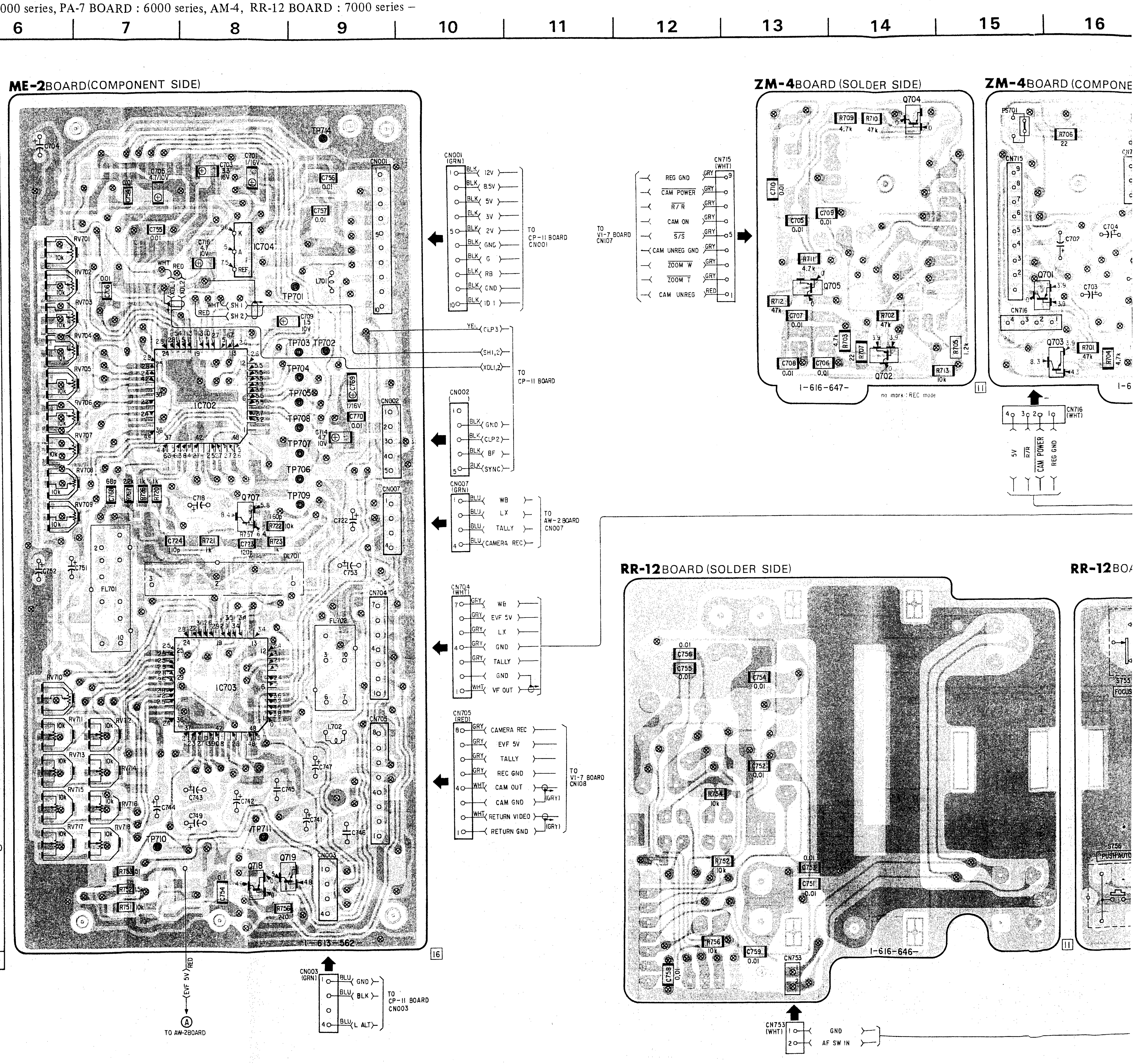
G
H
I
J
ME-2 BOARD (SOLDER SIDE)
IC701
TP714
TP701
TP702
TP703
TP704
TP705
TP708
TP707
TP706
TP709
TP711
TP710
1-613-562-
no mark: REC mode
16
4 FSC
TO CP-11 BOARD

| Q, IC | D | ADJ | TP |
|---|---|---|---|
| | | | 714 |
| 720 | | | |
| 701,721 | | | |
| IC701 | | | |
| IC704 | | RV701 | |
| 722 | | | |
| | | RV702 | 701 |
| | | RV703 | |
| | | RV704 | 702<br>703 |
| 702 | 703 | | 704 |
| | | RV705 | |
| 704 | | | 705 |
| IC702 | | RV706 | 706 |
| 703 | | | |
| 705 | | RV707 | 707 |
| | | | 708 |
| | | | 709 |
| 709 | | | |
| 708,710 | | | |
| 706 | | | |
| 711 | | | |
| IC703 | | | |
| | | RV710 | |
| | 701 | RV712,<br>RV711 | |
| | | RV714,<br>RV713 | |
| | | RV716,<br>RV715 | |
| | | RV718,<br>RV717 | 711<br>710 |
| 713 | | | |
| 719<br>718 | | | |
| 712<br>715 | | | |
| 716,717 | | | |
| Q,IC | D | ADJ | TP |


5
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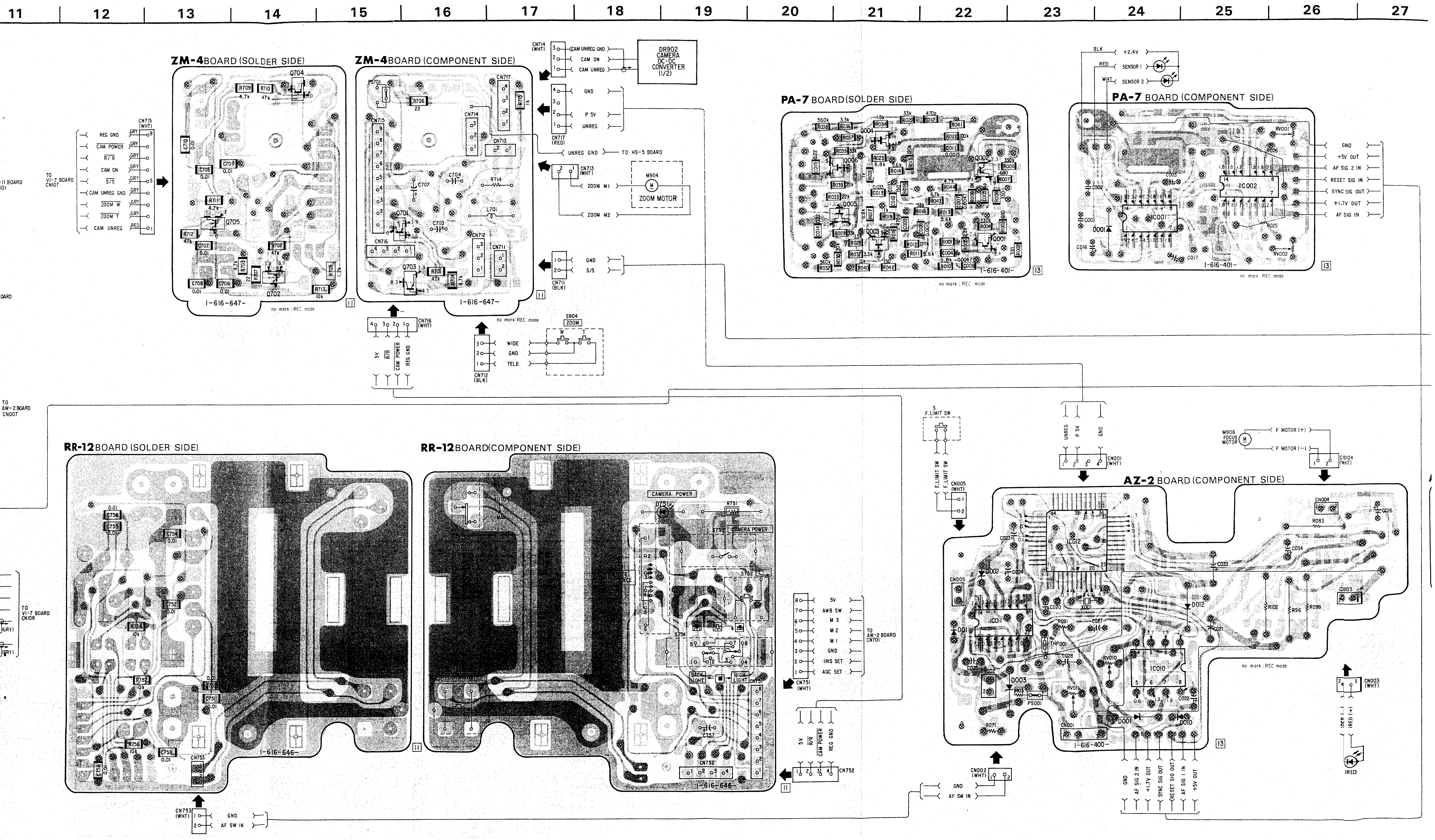
15
16
ME-2 BOARD (COMPONENT SIDE)
IC701
IC702
IC703
IC704
RV701
RV702
RV703
RV704
RV705
RV706
RV707
RV708
RV709
RV710
RV711
RV712
RV713
RV714
RV715
RV716
RV717
RV718
FL701
FL702
1-613-562-
16
EVF 5V
RED
A
TO AW-2BOARD
CN001 (GRN)
BLK 12V
BLK 8.5V
BLK 5V
BLK 3V
BLK 2V
BLK GND
BLK G
BLK RB
BLK GND
BLK ID 1
TO CP-11 BOARD CN001
YEL CLP3
SH1,2
XDL1,2
TO CP-11 BOARD
CN002
BLK GND
BLK CLP2
BLK BF
BLK SYNC
CN007 (GRN)
BLU WB
BLU LX
BLU TALLY
BLU CAMERA REC
TO AW-2 BOARD CN007
CN704 (WHT)
GRY WB
GRY EVF 5V
GRY LX
GRY GND
GRY TALLY
GND
WHT VF OUT
CN705 (RED)
GRY CAMERA REC
GRY EVF 5V
GRY TALLY
GRY REC GND
WHT CAM OUT
CAM GND
WHT RETURN VIDEO
RETURN GND
(GRY)
(GRY)
TO VI-7 BOARD CN108
CN003 (GRN)
BLU GND
BLU BLK
BLU L ALT
TO CP-11 BOARD CN003
TO VI-7 BOARD CN107
REG GND
CAM POWER
R/R
CAM ON
S/S
CAM UNREG GND
ZOOM W
ZOOM T
CAM UNREG
GRY
RED
CN715 (WHT)
ZM-4 BOARD (SOLDER SIDE)
Q704
Q705
Q702
1-616-647-
no mark: REC mode
11
ZM-4 BOARD (COMPONE
Q701
Q703
CN715
CN716
1-6
CN716 (WHT)
5V
R/R
CAM POWER
REG GND
RR-12 BOARD (SOLDER SIDE)
1-616-646-
11
CN753
CN753 (WHT)
GND
AF SW IN
RR-12 BO
S755
FOCUS
S756
PUSH AUTO

A-7 (IRED), SS-58 (SWITCH), SS-57 (SWITCH) PRINTED WIRING BOARDS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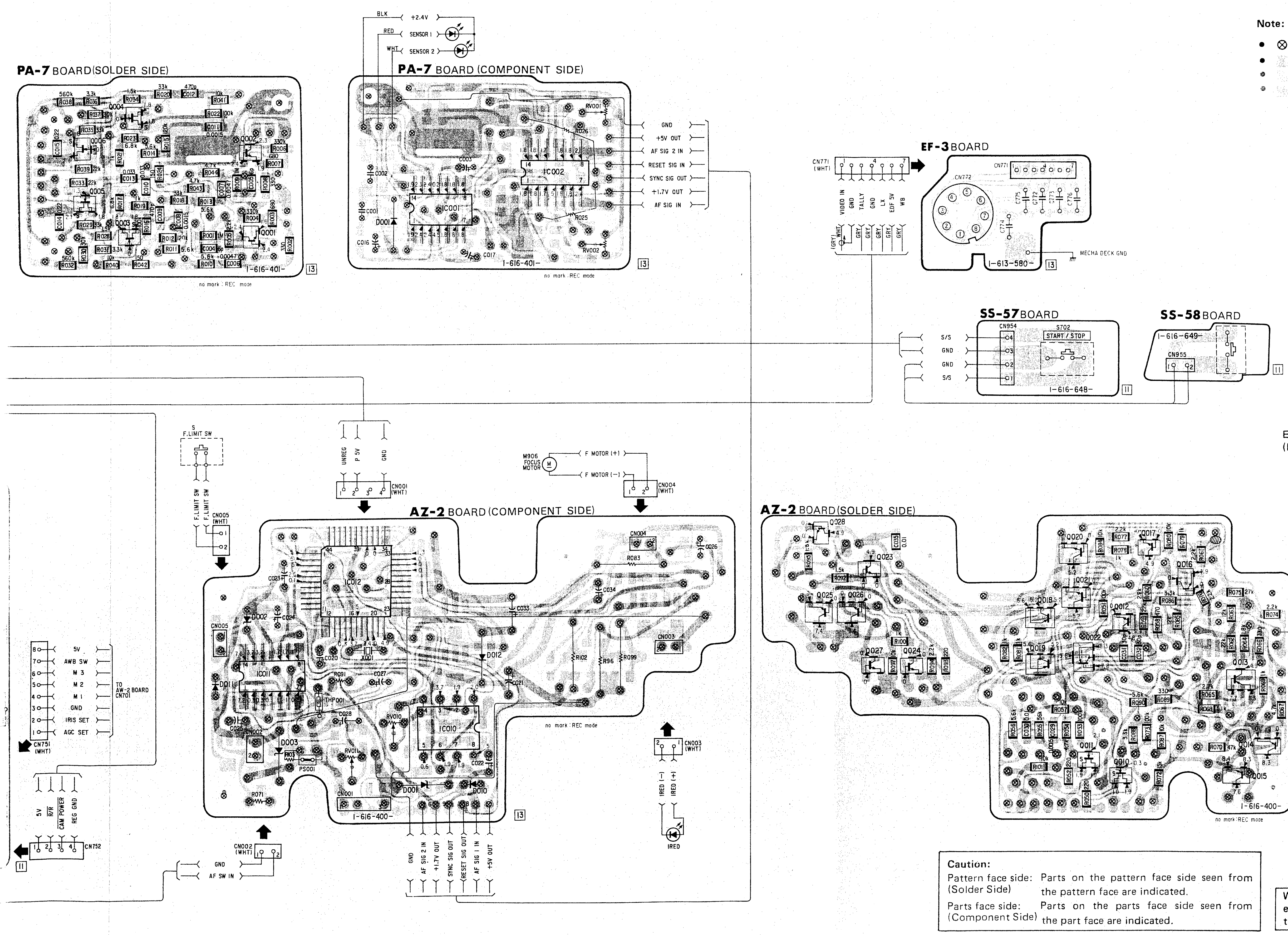
27
ZM-4 BOARD (SOLDER SIDE)
ZM-4 BOARD (COMPONENT SIDE)
1-616-647-
no mark : REC mode
CN715 (WHT)
REG GND
CAM POWER
R/R
CAM ON
S/S
CAM UNREG GND
ZOOM W
ZOOM T
CAM UNREG
TO VI-7 BOARD CN107
CN714 (WHT)
CAM UNREG GND
CAM ON
CAM UNREG
DR902 CAMERA DC-DC CONVERTER (1/2)
CN717 (RED)
GND
P 5V
UNREG
UNREG GND
TO HS-5 BOARD
CN713 (WHT)
ZOOM M1
ZOOM M2
M904
ZOOM MOTOR
CN711 (BLK)
S/S
CN716 (WHT)
5V
R/R
CAM POWER
REG GND
CN712 (BLK)
WIDE
TELE
S904 ZOOM
PA-7 BOARD (SOLDER SIDE)
PA-7 BOARD (COMPONENT SIDE)
1-616-401-
+2.4V
SENSOR 1
SENSOR 2
BLK
RED
WHT
+5V OUT
AF SIG 2 IN
RESET SIG IN
SYNC SIG OUT
+1.7V OUT
AF SIG IN
IC001
IC002
TO AW-2 BOARD CN007
RR-12 BOARD (SOLDER SIDE)
RR-12 BOARD (COMPONENT SIDE)
1-616-646-
CAMERA POWER
BACK LIGHT
HIGH LIGHT
CN751 (WHT)
AWB SW
M 3
M 2
M 1
IRIS SET
AGC SET
TO AW-2 BOARD CN701
CN752
CN753 (WHT)
AF SW IN
TO VI-7 BOARD CN108
S F.LIMIT SW
CN005 (WHT)
F.LIMIT SW
CN001 (WHT)
M906 FOCUS MOTOR
F MOTOR (+)
F MOTOR (−)
CN004 (WHT)
AZ-2 BOARD (COMPONENT SIDE)
IC012
IC011
IC010
1-616-400-
CN002 (WHT)
CN003 (WHT)
IRED (−)
IRED (+)
IRED
RESET SIG OUT
AF SIG 1 IN
+5V OUT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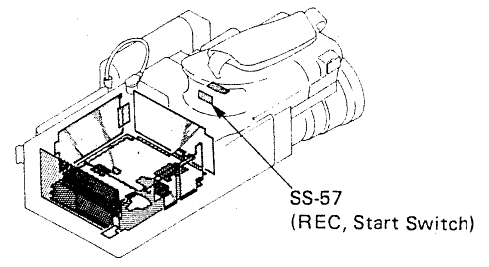
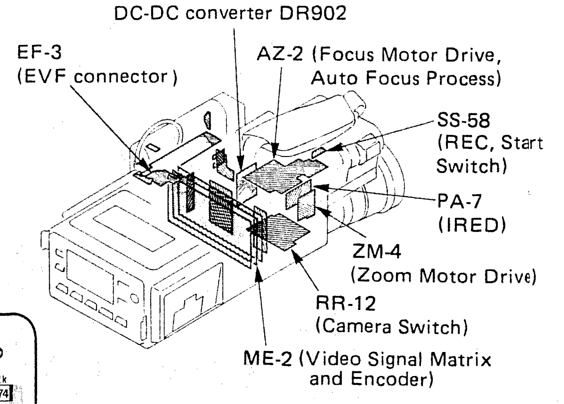
31
32
33
34
35
A
B
C
D
E
F
G
H
I
J
PA-7 BOARD (SOLDER SIDE)
1-616-401-
no mark : REC mode
PA-7 BOARD (COMPONENT SIDE)
BLK +2.4V
RED SENSOR 1
WHT SENSOR 2
GND
+5V OUT
AF SIG 2 IN
RESET SIG IN
SYNC SIG OUT
+1.7V OUT
AF SIG IN
IC001
IC002
RV001
RV002
1-616-401-
no mark : REC mode
EF-3 BOARD
CN771 (WHT)
VIDEO IN
GND
TALLY
GND
LX
EDF 5V
WB
(GRY)
GRY
CN772
MECHA DECK GND
1-613-580-
SS-57 BOARD
CN954
S702 START / STOP
S/S
GND
GND
S/S
1-616-648-
SS-58 BOARD
1-616-649-
CN955
S F.LIMIT SW
F.LIMIT SW
F.LIMIT SW
CN005 (WHT)
UNREG
P 5V
GND
CN001 (WHT)
M906 FOCUS MOTOR
F MOTOR (+)
F MOTOR (−)
CN004 (WHT)
AZ-2 BOARD (COMPONENT SIDE)
IC012
IC011
IC010
RV010
RV011
PS001
THP001
X001
CN005
CN003
CN001
CN002
CN004
1-616-400-
no mark : REC mode
5V
AWB SW
M 3
M 2
M 1
GND
IRIS SET
AGC SET
TO AW-2 BOARD CN701
CN751 (WHT)
5V
R/R
CAM POWER
REG GND
CN752
CN002 (WHT)
GND
AF SW IN
GND
AF SIG 2 IN
+1.7V OUT
SYNC SIG OUT
RESET SIG IN
AF SIG 1 IN
+5V OUT
CN003 (WHT)
IRED (−)
IRED (+)
IRED
AZ-2 BOARD (SOLDER SIDE)
D004
CHASSIS GND
1-616-400-
no mark : REC mode
13
11

**Note:**

- ⊗ : Through hole.
- ▨ : pattern from the side which enables seeing.
- ▨ : B+ pattern from the side which enables seeing
- ▨ : pattern of the rear side.


SS-57
(REC, Start Switch)


DC-DC converter DR902
EF-3
(EVF connector)
AZ-2 (Focus Motor Drive, Auto Focus Process)
SS-58
(REC, Start Switch)
PA-7
(IRED)
ZM-4
(Zoom Motor Drive)
RR-12
(Camera Switch)
ME-2 (Video Signal Matrix and Encoder)

**Caution:**

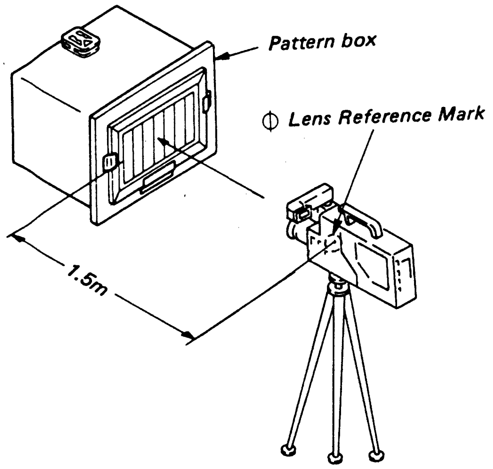
| | |
|---|---|
| Pattern face side: (Solder Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component Side) | Parts on the parts face side seen from the part face are indicated. |

When indicating parts by reference number, please include the board name.

**Note:**

- Caution when replacing tip parts.
  New parts must be attached after removal of tip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the head.
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted.
  50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ▣ : Nonflammable resistor
- ——— : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box colour bars.
  - (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

### 1. Connection


Pattern box
Φ Lens Reference Mark
1.5m

### 2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

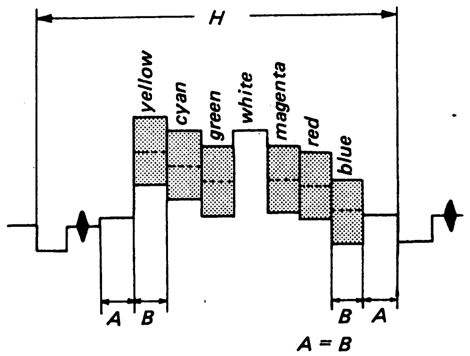

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

*Fig. a Camera output waveform of TP711 on ME-2 board*

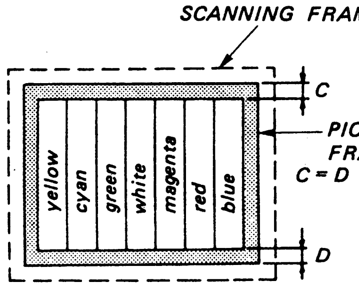

SCANNING FRAME
C
PICTURE TUBE FRAME
C = D
D
yellow
cyan
green
white
magenta
red
blue

*Fig. b Picture of TV monitor screen*

# CAMERA (1) CAMERA (1)

## ZM-4 (ZOOM MOTOR DRIVE), RR-12 (SWITCH), ME-2 (MATRIX/ENCODER), EF-3 (EVF CONNECTOR), AZ-2 (MOTOR DRIVE, AUTO FOCUS PROCESS), PA-7 (IRED), SS-58 (SWITCH), S

– Ref. No. AZ-2, SS-57, SS-58 BOARD : 1000 series, ME-2 BOARD : 3000 series, FE-3 BOARD : 5000 series, PA-7 BOARD : 6000 series, AM-4, RR-12 BOARD : 7000 series –

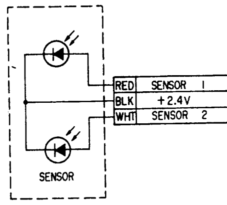
1 2 3 4 5 6 7 8 9 10 11 12

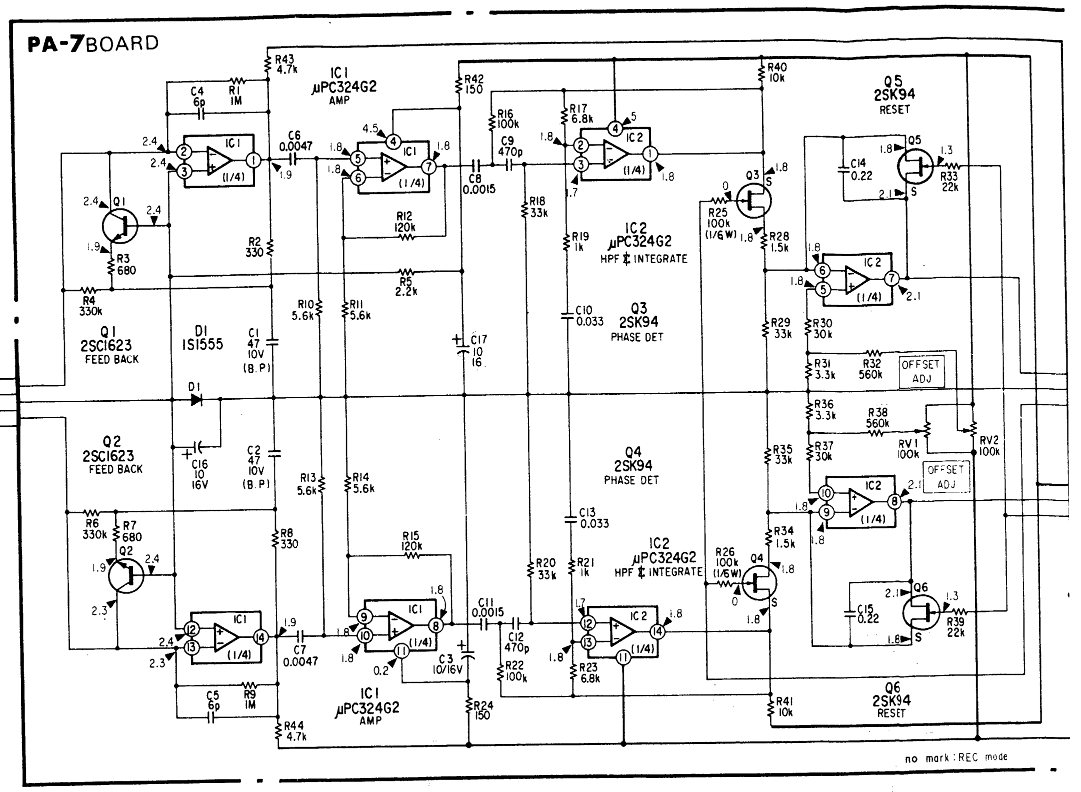
A B C D E F G H I J

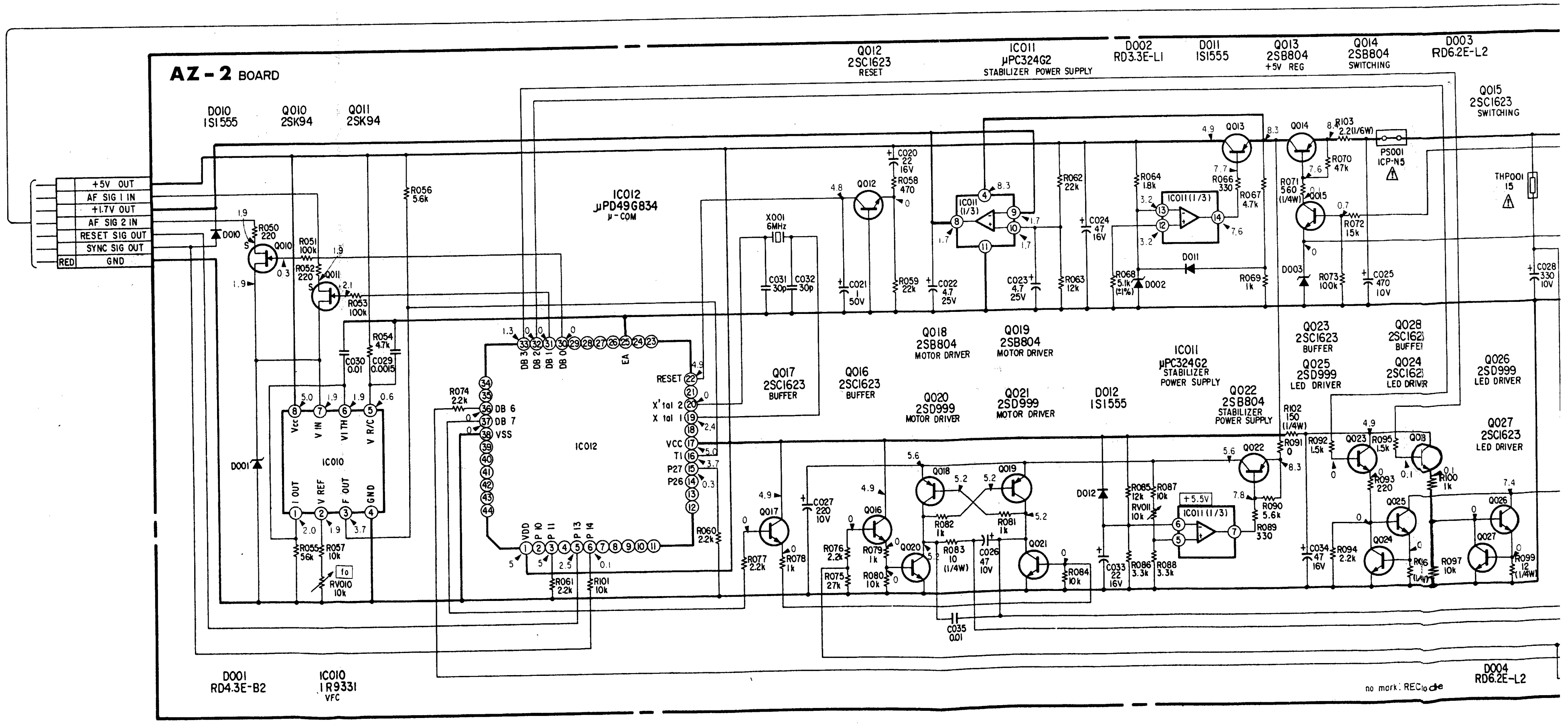
**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

When indicating parts by reference number, please include the board name.

- Signal path
  - ➡ : REC Y SIGNAL
  - ➡ : REC CHROMA SIGNAL
  - ➡ : REC Y & CHROMA SIGNAL

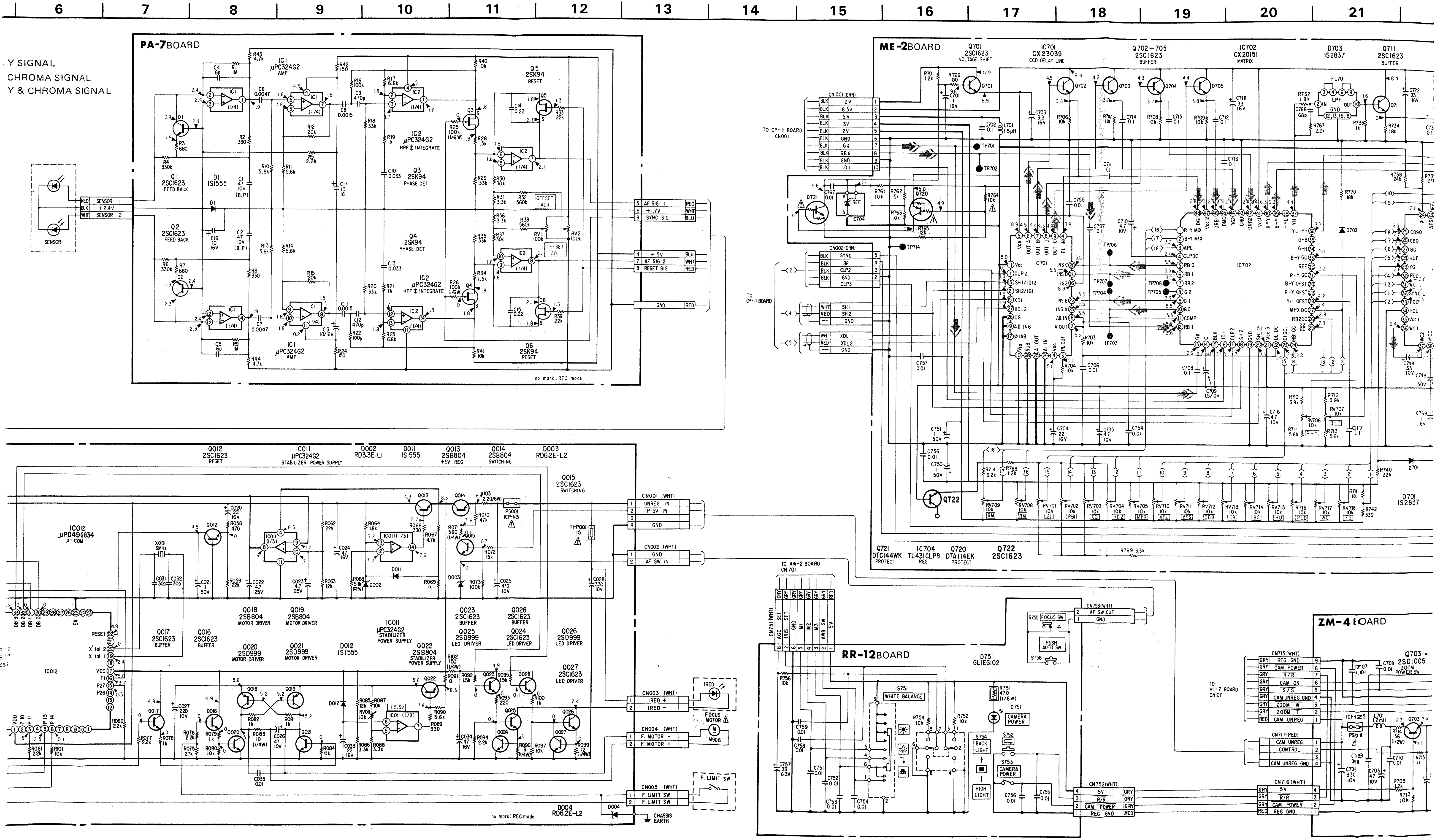



PA-7BOARD
RED SENSOR 1
BLK +2.4V
WHT SENSOR 2
IC1 μPC324G2 AMP
IC2 μPC324G2 HPF ⇌ INTEGRATE
Q1 2SC1623 FEED BACK
Q2 2SC1623 FEED BACK
Q3 2SK94 PHASE DET
Q4 2SK94 PHASE DET
Q5 2SK94 RESET
Q6 2SK94 RESET
D1 1S1555
OFFSET ADJ
RV1 100k
RV2 100k
no mark : REC mode


AZ-2 BOARD
+5V OUT
AF SIG 1 IN
+1.7V OUT
AF SIG 2 IN
RESET SIG OUT
SYNC SIG OUT
RED GND
D010 1S1555
Q010 2SK94
Q011 2SK94
Q012 2SC1623 RESET
IC011 μPC324G2 STABILIZER POWER SUPPLY
D002 RD3.3E-L1
D011 1S1555
Q013 2SB804 +5V REG
Q014 2SB804 SWITCHING
D003 RD6.2E-L2
Q015 2SC1623 SWITCHING
IC012 μPD49G834 μ-COM
X001 6MHz
PS001 ICP-N5
THP001 15
Q017 2SC1623 BUFFER
Q016 2SC1623 BUFFER
Q018 2SB804 MOTOR DRIVER
Q019 2SB804 MOTOR DRIVER
Q020 2SD999 MOTOR DRIVER
Q021 2SD999 MOTOR DRIVER
D012 1S1555
IC011 μPC324G2 STABILIZER POWER SUPPLY
Q022 2SB804 STABILIZER POWER SUPPLY
Q023 2SC1623 BUFFER
Q025 2SD999 LED DRIVER
Q028 2SC1621 BUFFER
Q024 2SC1621 LED DRIVER
Q026 2SD999 LED DRIVER
Q027 2SC1623 LED DRIVER
IC010 IR9331 VFC
D001 RD4.3E-B2
D004 RD6.2E-L2
RV010 10k
no mark: REC mode

## , EF-3 (EVF CONNECTOR), AZ-2 (MOTOR DRIVE, AUTO FOCUS PROCESS), PA-7 (IRED), SS-58 (SWITCH), SS-57 (SWITCH) SCHEMATIC DIAGRAM

: 5000 series, PA-7 BOARD : 6000 series, AM-4, RR-12 BOARD : 7000 series –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14
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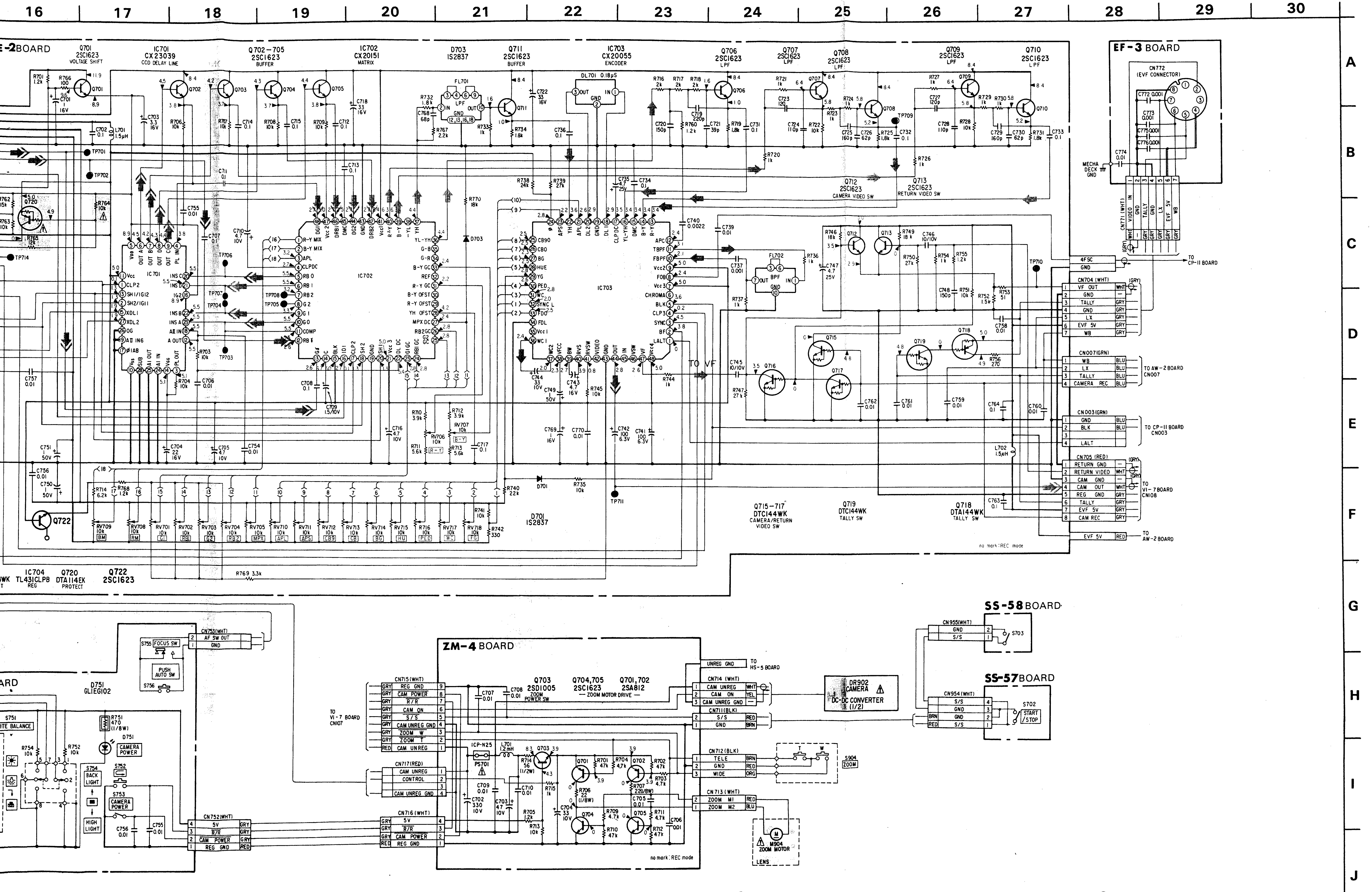
16
17
18
19
20
21
Y SIGNAL
CHROMA SIGNAL
Y & CHROMA SIGNAL
PA-7BOARD
SENSOR
IC1 μPC324G2 AMP
IC2 μPC324G2 HPF ⇆ INTEGRATE
Q1 2SC1623 FEED BACK
Q2 2SC1623 FEED BACK
D1 1S1555
Q3 2SK94 PHASE DET
Q4 2SK94 PHASE DET
Q5 2SK94 RESET
Q6 2SK94 RESET
OFFSET ADJ
AF SIG 1
+1.7V
SYNC SIG
+5V
AF SIG 2
RESET SIG
GND
no mark : REC mode
ME-2BOARD
Q701 2SC1623 VOLTAGE SHIFT
IC701 CX23039 CCD DELAY LINE
Q702–705 2SC1623 BUFFER
IC702 CX20151 MATRIX
D703 1S2837
Q711 2SC1623 BUFFER
TO CP-11 BOARD CN001
TO CP-11 BOARD
Q721 DTC144WK PROTECT
IC704 TL431CLPB REG
Q720 DTA114EK PROTECT
Q722 2SC1623
D701 1S2837
Q012 2SC1623 RESET
IC011 μPC324G2 STABILIZER POWER SUPPLY
D002 RD3.3E-L1
D011 1S1555
Q013 2SB804 +5V REG
Q014 2SB804 SWITCHING
D003 RD6.2E-L2
Q015 2SC1623 SWITCHING
IC012 μPD49G834 μ-COM
X001 6MHz
THP001
PS001 ICP-N5
UNREG IN
P 5V IN
AF SW IN
Q017 2SC1623 BUFFER
Q016 2SC1623 BUFFER
Q018 2SB804 MOTOR DRIVER
Q019 2SB804 MOTOR DRIVER
Q020 2SD999 MOTOR DRIVER
Q021 2SD999 MOTOR DRIVER
D012 1S1555
IC011 μPC324G2 STABILIZER POWER SUPPLY
Q022 2SB804 STABILIZER POWER SUPPLY
Q023 2SC1623 BUFFER
Q025 2SD999 LED DRIVER
Q028 2SC1623 BUFFER
Q024 2SC1623 LED DRIVER
Q026 2SD999 LED DRIVER
Q027 2SC1623 LED DRIVER
IRED +
IRED –
IRED
F. MOTOR –
F. MOTOR +
FOCUS MOTOR
M906
F. LIMIT SW
CHASSIS EARTH
D004 RD6.2E-L2
no mark : REC mode
TO AW-2 BOARD CN701
RR-12BOARD
S751 WHITE BALANCE
D751 GL1EG102
S755 FOCUS SW
PUSH AUTO SW
S756
S754 BACK LIGHT
HIGH LIGHT
S752
S753 CAMERA POWER
CAMERA POWER
AF SW OUT
5V
R/R
CAM POWER
REG GND
ZM-4BOARD
TO VI-7 BOARD CN107
REG GND
CAM POWER
R/R
CAM ON
S/S
CAM UNREG GND
ZOOM W
ZOOM T
CAM UNREG
CONTROL
Q703 2SD1005 ZOOM POWER SW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28
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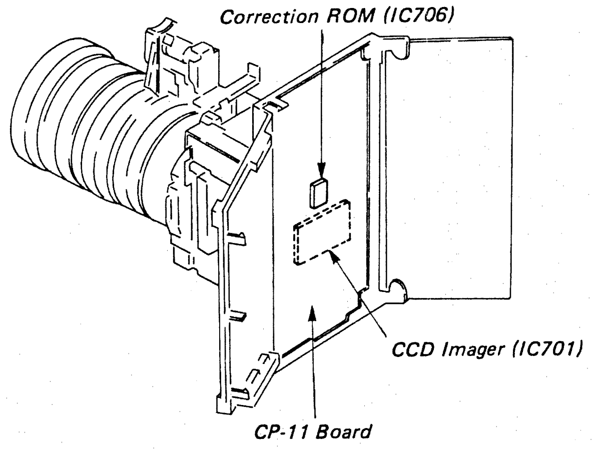
30
A
B
C
D
E
F
G
H
I
J
E-2 BOARD
Q701 2SC1623 VOLTAGE SHIFT
IC701 CX23039 CCD DELAY LINE
Q702-705 2SC1623 BUFFER
IC702 CX20151 MATRIX
D703 1S2837
Q711 2SC1623 BUFFER
IC703 CX20055 ENCODER
Q706 2SC1623 LPF
Q707 2SC1623 LPF
Q708 2SC1623 LPF
Q709 2SC1623 LPF
Q710 2SC1623 LPF
FL701 LPF
DL701 0.18μS
FL702 BPF
Q712 2SC1623 CAMERA VIDEO SW
Q713 2SC1623 RETURN VIDEO SW
EF-3 BOARD
CN772 (EVF CONNECTOR)
MECHA DECK GND
CN771 (WHT)
VIDEO IN
GND
TALLY
GND
LX
EVF 5V
WB
4FSC
GND
TO CP-11 BOARD
CN704 (WHT)
VF OUT
GND
TALLY
GND
LX
EVF 5V
WB
CN007 (GRN)
WB
LX
TALLY
CAMERA REC
TO AW-2 BOARD CN007
CN003 (GRN)
GND
BLK
LALT
TO CP-11 BOARD CN003
CN705 (RED)
RETURN GND
RETURN VIDEO
CAM GND
CAM OUT
REG GND
TALLY
EVF 5V
CAM REC
TO VI-7 BOARD CN108
EVF 5V
TO AW-2 BOARD
TO VF
Q715-717 DTC144WK CAMERA/RETURN VIDEO SW
Q719 DTC144WK TALLY SW
Q718 DTA144WK TALLY SW
no mark : REC mode
D701 1S2837
IC704 TL431CLPB REG
Q720 DTA114EK PROTECT
Q722 2SC1623
RV709 BM
RV708 RM
RV701 CL
RV702 RB
RV703 G2
RV704 RB2
RV705 MPX
RV710 APL
RV711 APS
RV712 CB9
RV713 CB
RV714 BG
RV715 HU
RV716 PED
RV717 WC
RV718 FG
CN753 (WHT)
AF SW OUT
GND
S755 FOCUS SW
PUSH AUTO SW
S756
D751 GL1EG102
S751 WHITE BALANCE
R751 470 (1/8W)
D751 CAMERA POWER
S754 BACK LIGHT
S752
S753 CAMERA POWER
HIGH LIGHT
CN752 (WHT)
5V
R/R
CAM POWER
REG GND
ZM-4 BOARD
CN715 (WHT)
REG GND
CAM POWER
R/R
CAM ON
S/S
CAM UNREG GND
ZOOM W
ZOOM T
CAM UNREG
TO VI-7 BOARD CN107
Q703 2SD1005 ZOOM POWER SW
Q704,705 2SC1623
Q701,702 2SA812
ZOOM MOTOR DRIVE
CN717 (RED)
CAM UNREG
CONTROL
CAM UNREG GND
ICP-N25 PS701
CN716 (WHT)
5V
R/R
CAM POWER
REG GND
no mark : REC mode
UNREG GND
TO HS-5 BOARD
CN714 (WHT)
CAM UNREG
CAM ON
CAM UNREG GND
DR902 CAMERA DC-DC CONVERTER (1/2)
CN711 (BLK)
S/S
GND
CN712 (BLK)
TELE
GND
WIDE
S904 ZOOM
CN713 (WHT)
ZOOM M1
ZOOM M2
M904 ZOOM MOTOR
LENS
SS-58 BOARD
CN955 (WHT)
GND
S/S
S703
SS-57 BOARD
CN954 (WHT)
S/S
GND
GND
S/S
S702 START/STOP

# CAMERA (2)

- **Precautions for replacement of CCD imager block**
- The CCD imager block (IC701, IC706) mounted on the CP-11 board is a pair of a CCD imager and a correction ROM* to optimize its characteristics.
  This correction ROM is manufactured to match the pair CCD imager, and the CCD imager only, or the correction ROM only, cannot be exchanged.
  * Some models which do not require any correction are not mounted with a correction ROM.
- The CCD imager supplied as a service part is divided into two types depending on the characteristics. Take the following steps after examining the service set.
  (1) A CCD imager and correction ROM are supplied together:
  Replace the CCD imager and correction ROM simultaneously. Mount the supplied correction ROM when a correction ROM is not mounted in the service set.
  (2) A CCD imager only is supplied:
  This CCD imager requires no correction. Remove any correction ROM mounted in the service set and replace the CCD imager only.
- A CCD imager block (IC701, IC706) is not mounted on the mounted CP-11 board suplied as a service part.
  Remove the CCD imager block from the previous board and remount it on the new board when repairing or exchanging the CP-11 board.
- Adjust the entire camera section when the CCD imager block is exchanged.

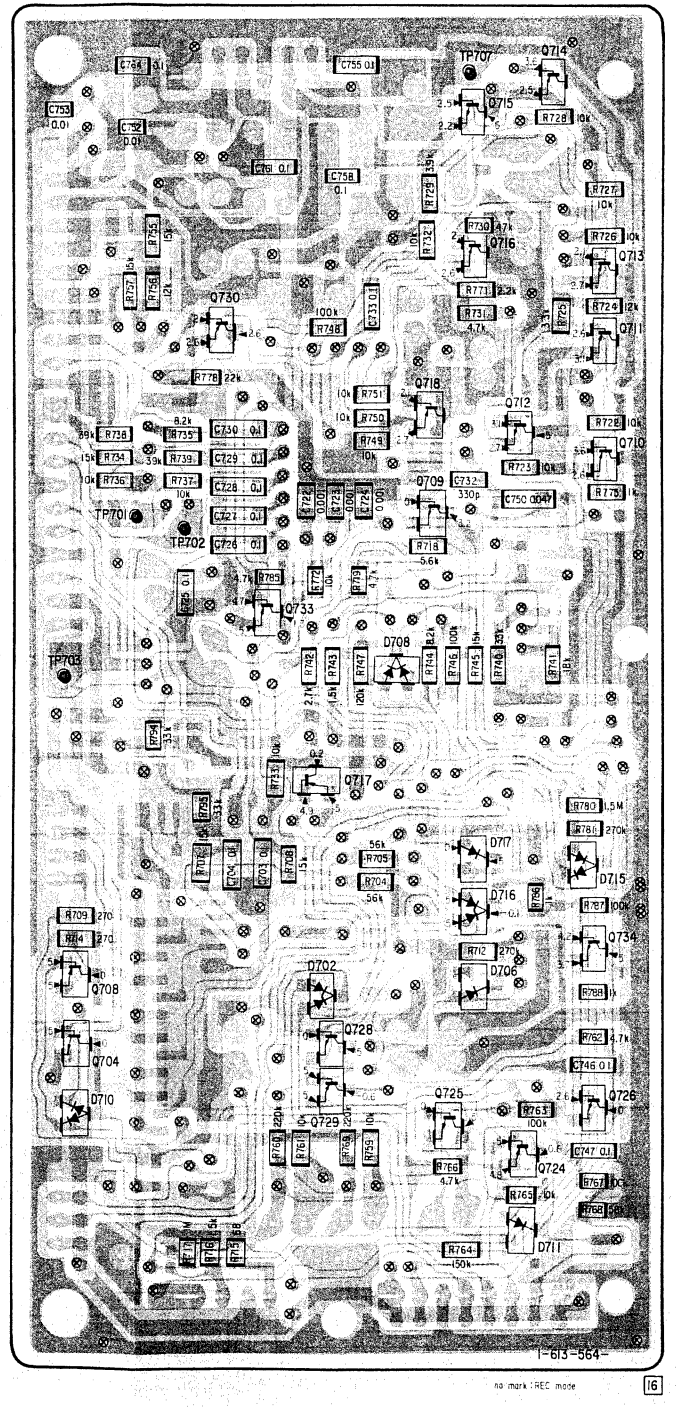

Correction ROM (IC706)
CCD Imager (IC701)
CP-11 Board

*CCD Imager Block*

## CP-11 (CCD IMAGER, VIDEO PROCESS), OS-2 (OSC), VR-9 (VIDEO PROCESS), DR-30 (TIMING GENERATOR), AW-2 (AUTO WHITE BA

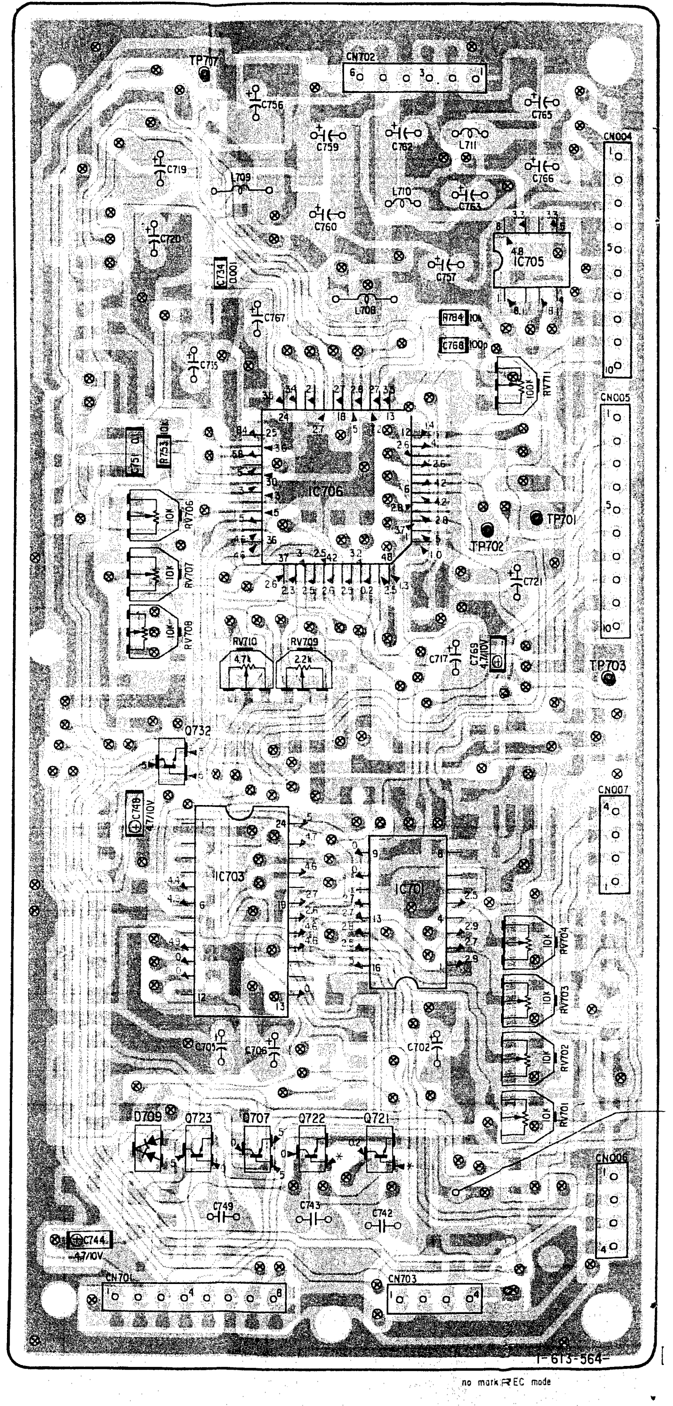
– Ref. No. CP-11, OS-2, VR-9, DR-30 BOARD : 2000 series, AW-2 BOARD : 4000 series –

**AW-2**BOARD (SOLDER SIDE)


1 2 3 4 5 6 7 8 9
A B C D E F G H I J
TP707
TP701
TP702
TP703
IC705
IC706
IC701
IC703
1-613-564-
no mark : REC mode
16

| Q, IC | D | ADJ | TP |
|---|---|---|---|
| | | | 707 |
| 714 | | | |
| 715 | | | |
| IC705 716 | | | |
| 713 | | | |
| 730 | | | |
| 711 | | | |
| | | RV711 | |
| 718 | | | |
| 712 | | | |
| 710 | | | |
| IC706 | | | |
| 709 | | RV706 | 701 |
| | | | 702 |
| | | RV707 | |
| 733 | | | |
| | | RV708 | |
| | 708 | RV709, RV710 | 703 |
| 732 | | | |
| 717 | | | |
| | 717 | | |
| | 715 | | |
| IC701, IC703 | 716 | | |
| 734 | | RV704 | |
| 708 | 706 | | |
| | 702 | RV703 | |
| 704 728 | | RV702 | |
| 729 | | | |
| 726 | 710 | RV701 | |
| 725 | | | |
| 721, 722, 707, 723, 724 | 709 | | |
| | 711 | | |
| Q, IC | D | ADJ | TP |

**AW-2**BOARD (COMPONENT SIDE)


TP704
CN702
CN004
CN005
CN007
CN006
CN701
CN703
IC705
IC706
IC703
TP701
TP702
TP703
RV711
RV710
RV709
RV701
RV702
RV703
RV704
1-613-564-
no mark : REC mode

**Note:**

- ⊗ : Through hole.
- ▨ : pattern from the side which enables seeing.
- ▨ : B+ pattern from the side which enables seeing.
- ▨ : pattern of the rear side.

**Caution:**

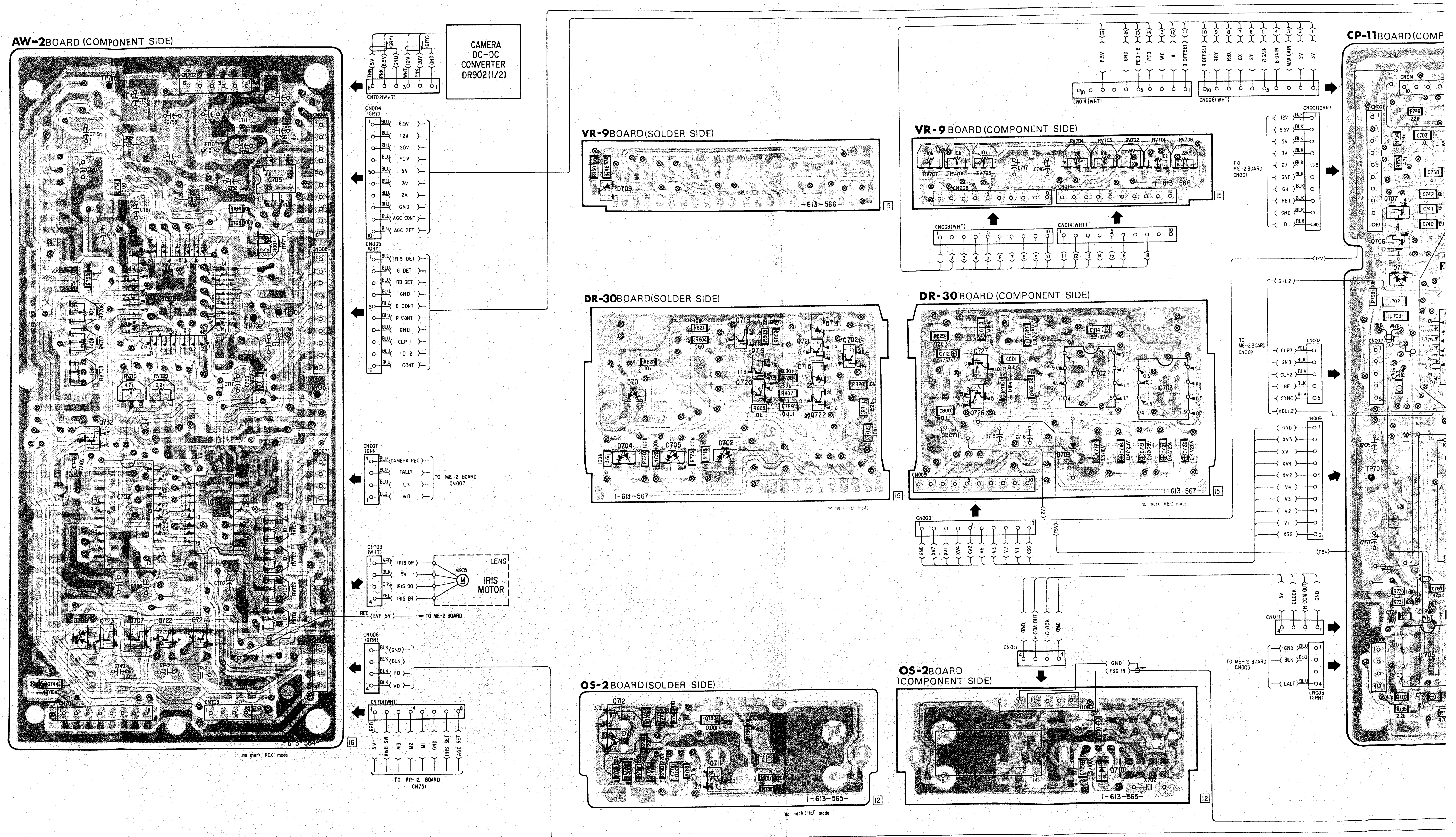
| | |
|---|---|
| Pattern face side: (Solder Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component Side) | Parts on the parts face side seen from the part face are indicated. |

When indicating parts by reference number, please include the board name.

## , VR-9 (VIDEO PROCESS), DR-30 (TIMING GENERATOR), AW-2 (AUTO WHITE BALANCE) SCHEMATIC DIAGRAM

BOARD : 4000 series –

| Q, IC | D | ADJ | TP |
|---|---|---|---|
| | | | 707 |
| 714 | | | |
| 715 | | | |
| IC705 716 | | | |
| 713 | | | |
| 730 | | | |
| 711 | | | |
| | | RV711 | |
| 718 | | | |
| 712 | | | |
| 710 | | | |
| IC706 | | | |
| 709 | | RV706 | 701 |
| | | | 702 |
| | | RV707 | |
| 733 | | RV708 | |
| | 708 | RV709, RV710 | 703 |
| 732 | | | |
| 717 | | | |
| | 717<br>715 | | |
| IC701, IC703 | 716 | | |
| 734 | | RV704 | |
| 708 | 706<br>702 | RV703 | |
| 704 728 | | RV702 | |
| 729 | | | |
| 726 | 710 | RV701 | |
| 725 | | | |
| 721,722,707,723,724 | 709 | | |
| | 711 | | |
| Q, IC | D | ADJ | TP |


5
6
7
8
9
10
11
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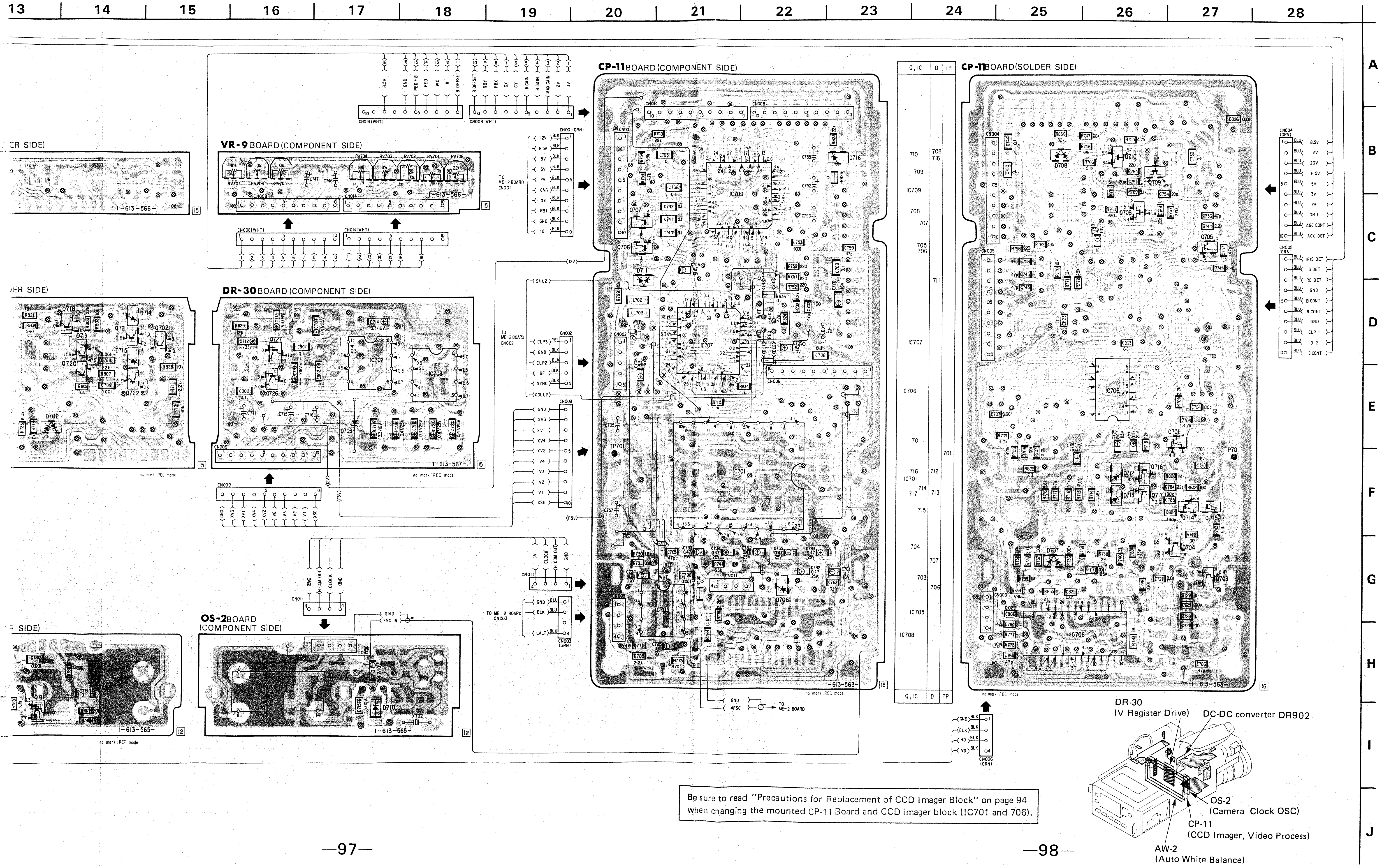
14
15
16
17
18
19
20
AW-2 BOARD (COMPONENT SIDE)
CN702(WHT)
THW 5V
PNK 8.5V
GND
WHT 12V
PNK 20V
GND
(GRY)
CAMERA DC-DC CONVERTER DR902(1/2)
CN004 (GRY)
BLU 8.5V
BLU 12V
BLU 20V
BLU F5V
BLU 5V
BLU 3V
BLU 2V
BLU GND
BLU AGC CONT
BLU AGC DET
CN005 (GRY)
BLU IRIS DET
BLU G DET
BLU RB DET
BLU GND
BLU B CONT
BLU R CONT
BLU GND
BLU CLP 1
BLU ID 2
BLU CONT
CN007 (GNN)
BLU CAMERA REC
BLU TALLY
BLU LX
BLU WB
TO ME-2 BOARD CN007
CN703 (WHT)
RED IRIS DR
BLK 5V
ORG IRIS DO
YEL IRIS BR
LENS
M905
IRIS MOTOR
RED EVF 5V
TO ME-2 BOARD
CN006 (GRN)
BLK GND
BLK BLK
BLK HD
BLK VD
CN701(WHT)
RED
5V
AWB SW
M3
M2
M1
GND
IRIS SET
AGC SET
TO RR-12 BOARD CN751
1-613-564-
16
no mark : REC mode
VR-9 BOARD (SOLDER SIDE)
D709
1-613-566-
15
VR-9 BOARD (COMPONENT SIDE)
RV704
RV703
RV702
RV701
RV708
RV707
RV706
RV705
C747
C746
CN008
CN014
1-613-566-
15
CN008(WHT)
CN014(WHT)
CN014(WHT)
CN008(WHT)
8.5V
GND
PED+B
PED
WC
B OFFSET
R OFFSET
RBY
RBX
GX
GY
R GAIN
B GAIN
MAX GAIN
2V
3V
CN001(GRN)
12V
8.5V
5V
3V
2V
GND
G1
RB1
GND
ID1
TO ME-2 BOARD CN001
(12V)
SH1,2
TO ME-2 BOARD CN002
CN002
YEL CLP3
BLK GND
BLK CLP2
BLK BF
BLK SYNC
XDL1,2
CN009
GND
XV3
XV1
XV4
XV2
V4
V3
V2
V1
XSG
(F5V)
DR-30 BOARD (SOLDER SIDE)
D701
D704
D705
D702
D714
Q702
Q719
Q720
Q721
Q722
D715
1-613-567-
15
no mark : REC mode
DR-30 BOARD (COMPONENT SIDE)
Q727
Q726
IC702
IC703
D703
CN009
1-613-567-
15
no mark : REC mode
CN011
5V
CLOCK
H COM OUT
GND
TO ME-2 BOARD CN003
BLU GND
BLU BLK
BLU LALT
CN003 (GRN)
OS-2 BOARD (SOLDER SIDE)
Q712
Q711
1-613-565-
12
no mark : REC mode
OS-2 BOARD (COMPONENT SIDE)
GND
FSC IN
X702
D710
1-613-565-
12
CP-11 BOARD (COMP
CN014
CN001
Q707
Q706
D711
L702
L703
R799
TP701
C705
C757

:
face side: Parts on the pattern face side seen from
Side) the pattern face are indicated.
ce side: Parts on the parts face side seen from
onent Side) the part face are indicated.

When indicating parts by reference number, please include the board name.

# CAMERA (2) CAMERA (2)


13
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18
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21
22
23
24
25
26
27
28
A
B
C
D
E
F
G
H
I
J
VR-9 BOARD (COMPONENT SIDE)
DR-30 BOARD (COMPONENT SIDE)
OS-2 BOARD (COMPONENT SIDE)
CP-11 BOARD (COMPONENT SIDE)
CP-11 BOARD (SOLDER SIDE)
1-613-566-
1-613-567-
1-613-565-
1-613-563-
CN014 (WHT)
CN008 (WHT)
CN009
CN001 (GRN)
CN002
CN003 (GRN)
CN004 (GRN)
CN005 (GRN)
CN006 (GRN)
CN011
TO ME-2 BOARD CN001
TO ME-2 BOARD CN002
TO ME-2 BOARD CN003
TO ME-2 BOARD
8.5V
GND
PED+B
PED
WC
B OFFSET
R OFFSET
RBY
RBX
GX
GY
R GAIN
B GAIN
MAX GAIN
2V
3V
12V
5V
GI
RBI
IDI
SH1,2
CLP3
CLP2
BF
SYNC
XDL1,2
XV3
XV1
XV4
XV2
V4
V3
V2
V1
XSG
F5V
CLOCK
H COM OUT
FSC IN
4FSC
LALT
20V
F 5V
AGC CONT
AGC DET
IRIS DET
G DET
RB DET
B CONT
R CONT
CLP 1
ID 2
O CONT
HD
VD
Q, IC
D
TP
TP701
IC701
IC702
IC703
IC705
IC706
IC707
IC708
IC709
no mark : REC mode
DR-30
(V Register Drive)
DC-DC converter DR902
OS-2
(Camera Clock OSC)
CP-11
(CCD Imager, Video Process)
AW-2
(Auto White Balance)

Be sure to read "Precautions for Replacement of CCD Imager Block" on page 94 when changing the mounted CP-11 Board and CCD imager block (IC701 and 706).

## CP-11 (CCD IMAGER, VIDEO PROCESS), OS-2 (OSC), VR-9 (VIDEO PROCESS), DR-30 (TIMING GENERATOR), AW-2 (AUTO WHITE BALANCE) SCHEMATIC DIAGRAM

– Ref. No. CP-11, OS-2, VR-9, DR-30 BOARD : 2000 series, AW-2 BOARD : 4000 series –

**Note:**

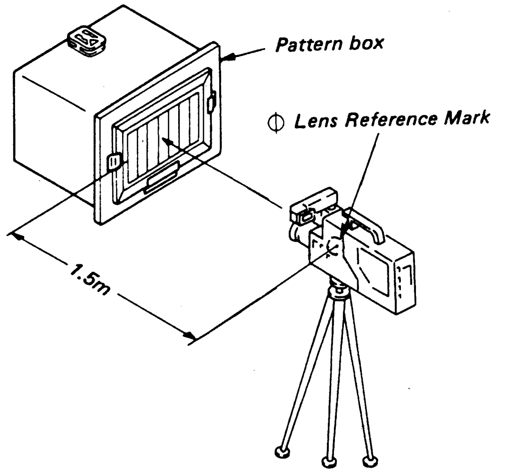
- Caution when replacing tip parts.
  New parts must be attached after removal of tip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the head.
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in µF (p:pF) unless otherwise noted.
  50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ——— : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  (1) Sample object: Pattern box colour bars.
  (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

When indicating parts by reference number, please include the board name.

- Signal path
  ➾ : REC Y & CHROMA SIGNAL

**1. Connection**


Pattern box
⌽ Lens Reference Mark
1.5m

**2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.**

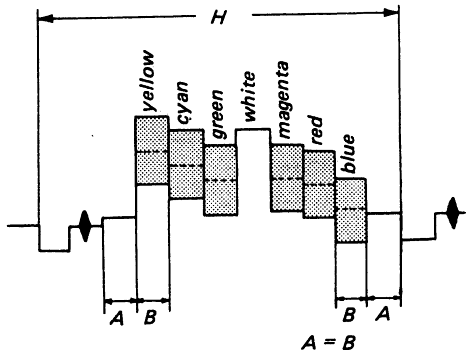

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

*Fig. a Camera output waveform of TP711 on ME-2 board*

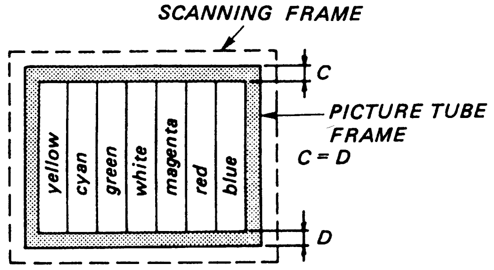
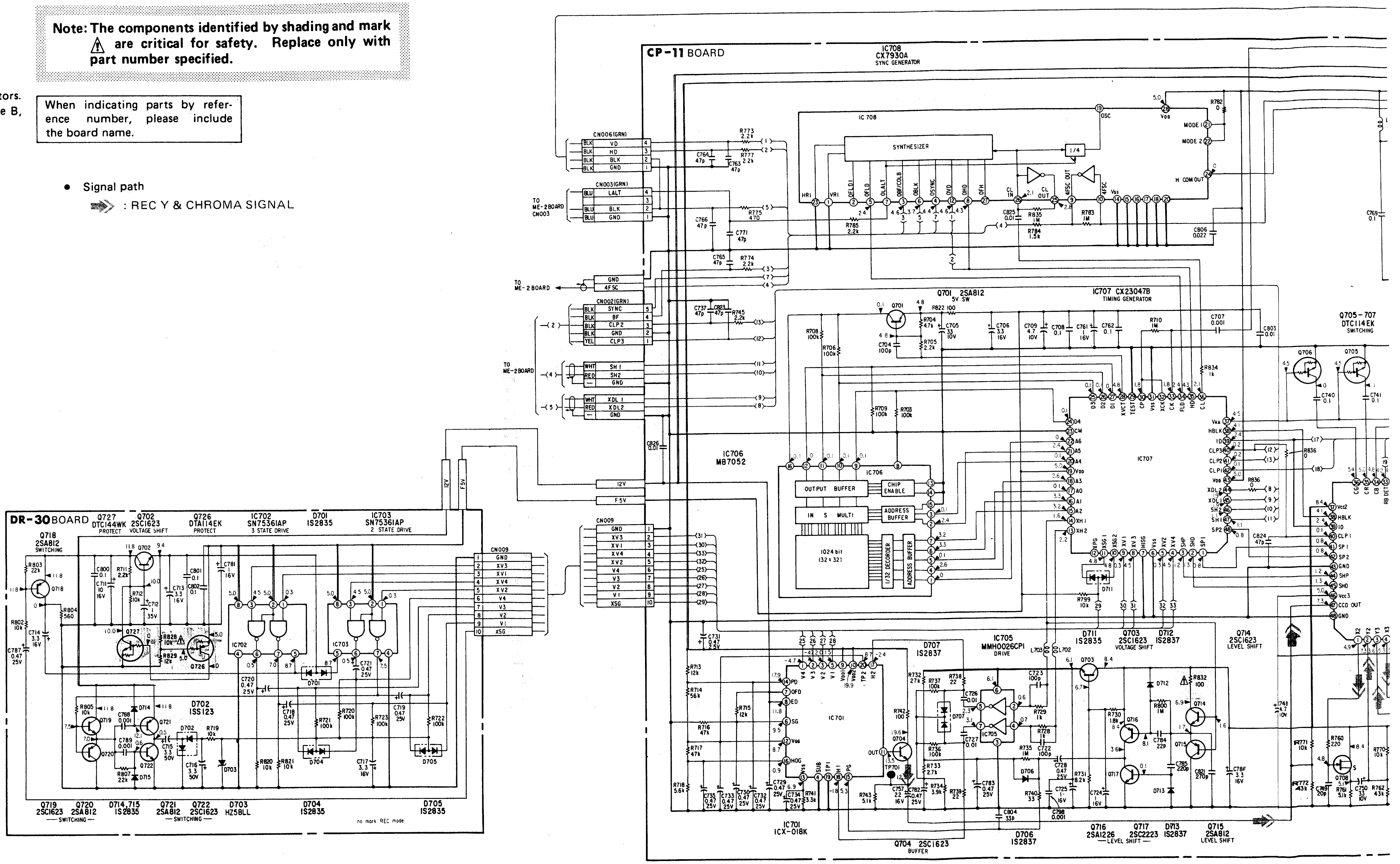
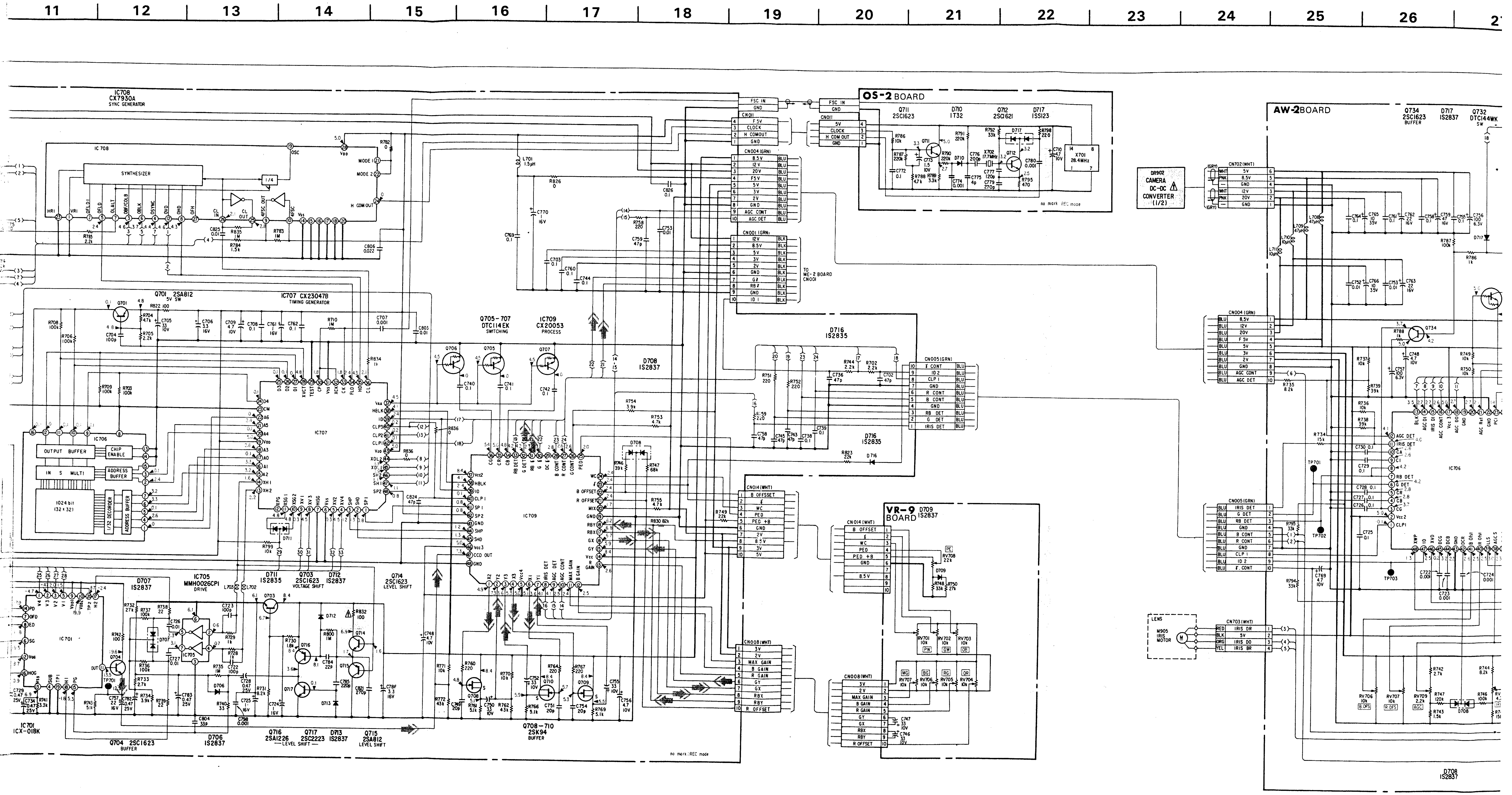

SCANNING FRAME
C
PICTURE TUBE FRAME
C = D
D
yellow
cyan
green
white
magenta
red
blue

*Fig. b Picture of TV monitor screen*


CP-11 BOARD
IC708 CX7930A SYNC GENERATOR
SYNTHESIZER
CN006(GRN)
CN003(GRN)
CN002(GRN)
CN009
TO ME-2 BOARD CN003
TO ME-2 BOARD
Q701 2SA812 5V SW
IC707 CX23047B TIMING GENERATOR
Q705-707 DTC114EK SWITCHING
IC706 MB7052
OUTPUT BUFFER
CHIP ENABLE
IN S MULTI
ADDRESS BUFFER
1024 bit (32×32)
1/32 DECODER
ADDRESS BUFFER
12V
F5V
DR-30 BOARD
Q727 DTC144WK PROTECT
Q702 2SC1623 VOLTAGE SHIFT
Q726 DTA114EK PROTECT
IC702 SN75361AP 3 STATE DRIVE
D701 1S2835
IC703 SN75361AP 2 STATE DRIVE
Q718 2SA812 SWITCHING
D702 1SS123
Q719 2SC1623 Q720 2SA812 — SWITCHING —
D714,715 1S2835
Q721 2SA812 Q722 2SC1623 — SWITCHING —
D703 HZ5BLL
D704 1S2835
D705 1S2835
no mark :REC mode
IC705 MMH0026CPI DRIVE
D707 1S2837
D711 1S2835
Q703 2SC1623 VOLTAGE SHIFT
D712 1S2837
Q714 2SC1623 LEVEL SHIFT
IC701
IC701 ICX-018K
Q704 2SC1623 BUFFER
D706 1S2837
Q716 2SA1226 Q717 2SC2223 — LEVEL SHIFT —
D713 1S2837
Q715 2SA812 LEVEL SHIFT

Be sure to read "Precautions for Replacement of CCD Imager Block" on page 94 when changing the mounted CP-11 Board and CCD imager block (IC701 and 706).

## C DIAGRAM


11
12
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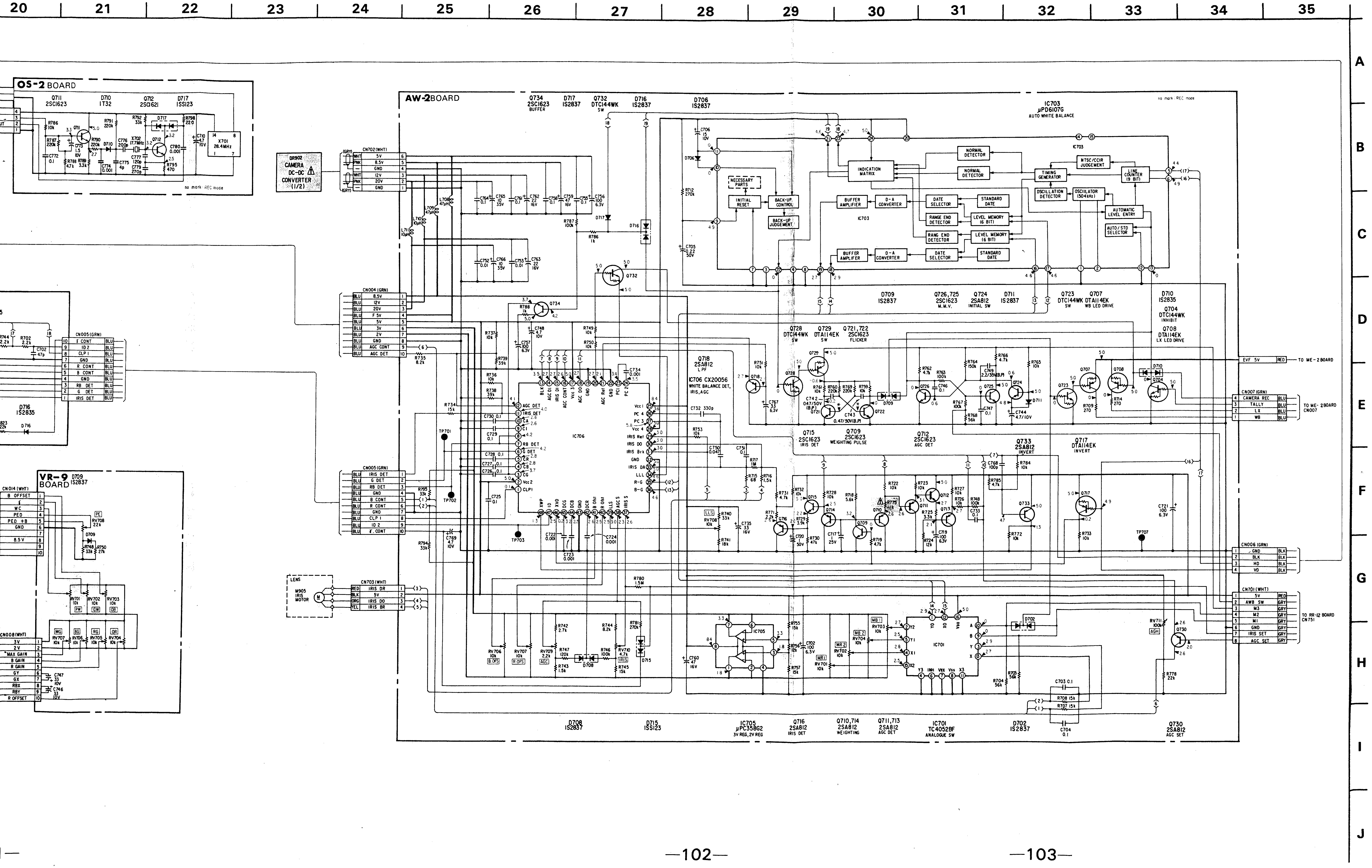
16
17
18
19
20
21
22
23
24
25
26
IC708 CX7930A SYNC GENERATOR
SYNTHESIZER
IC707 CX23047B TIMING GENERATOR
IC706
OUTPUT BUFFER
CHIP ENABLE
ADDRESS BUFFER
1024 bit (32×32)
1/32 DECORDER
IC701
IC701 ICX-018K
Q701 2SA812 5V SW
Q704 2SC1623 BUFFER
IC705 MMH0026CPI DRIVE
D707 1S2837
D711 1S2835
Q703 2SC1623 VOLTAGE SHIFT
D712 1S2837
Q714 2SC1623 LEVEL SHIFT
Q716 2SA1226
Q717 2SC2223
D713 1S2837
Q715 2SA812 LEVEL SHIFT
D706 1S2837
Q705-707 DTC114EK SWITCHING
IC709 CX20053 PROCESS
Q708-710 2SK94 BUFFER
D708 1S2837
D716 1S2835
CN011
CN004 (GRN)
CN001 (GRN)
TO ME-2 BOARD CN001
CN005 (GRN)
CN014 (WHT)
CN008 (WHT)
OS-2 BOARD
Q711 2SC1623
D710 1T32
Q712 2SC1621
D717 1SS123
X701 28.4MHz
VR-9 BOARD
D709 1S2837
AW-2 BOARD
Q734 2SC1623 BUFFER
D717 1S2837
Q732 DTC144WK SW
DR902 CAMERA DC-DC CONVERTER (1/2)
CN702 (WHT)
CN004 (GRN)
CN005 (GRN)
CN703 (WHT)
LENS
M905 IRIS MOTOR
IC706
TP701
TP702
TP703
D708 1S2837
no mark : REC mode

"Replacement of CCD Imager Block" on page 94
11 Board and CCD imager block (IC701 and 706).


OS-2 BOARD
AW-2BOARD
VR-9 BOARD
DR902 CAMERA DC-DC CONVERTER (1/2)
LENS
M905 IRIS MOTOR
IC703 μPD6107G AUTO WHITE BALANCE
IC706 CX20056 WHITE BALANCE DET, IRIS, AGC
IC705 μPC358G2 3V REG, 2V REG
IC701 TC4052BF ANALOGUE SW
INDICATION MATRIX
NORMAL DETECTOR
TIMING GENERATOR
NTSC/CCIR JUDGEMENT
LINE COUNTER (9 BIT)
OSCILLATION DETECTOR
OSCILLATOR (504kHz)
AUTOMATIC LEVEL ENTRY
AUTO/STD SELECTOR
NECESSARY PARTS
INITIAL RESET
BACK-UP CONTROL
BACK-UP JUDGEMENT
BUFFER AMPLIFIER
D-A CONVERTER
DATE SELECTOR
STANDARD DATE
RANGE END DETECTOR
LEVEL MEMORY (6 BIT)
CN702 (WHT)
CN004 (GRN)
CN005 (GRN)
CN703 (WHT)
CN007 (GRN)
CN006 (GRN)
CN701 (WHT)
CN014 (WHT)
CN008 (WHT)
TO ME-2 BOARD
TO ME-2 BOARD CN007
TO RR-12 BOARD CN751
EVF 5V
CAMERA REC
TALLY
LX
WB
no mark : REC mode
20
21
22
23
24
25
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27
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29
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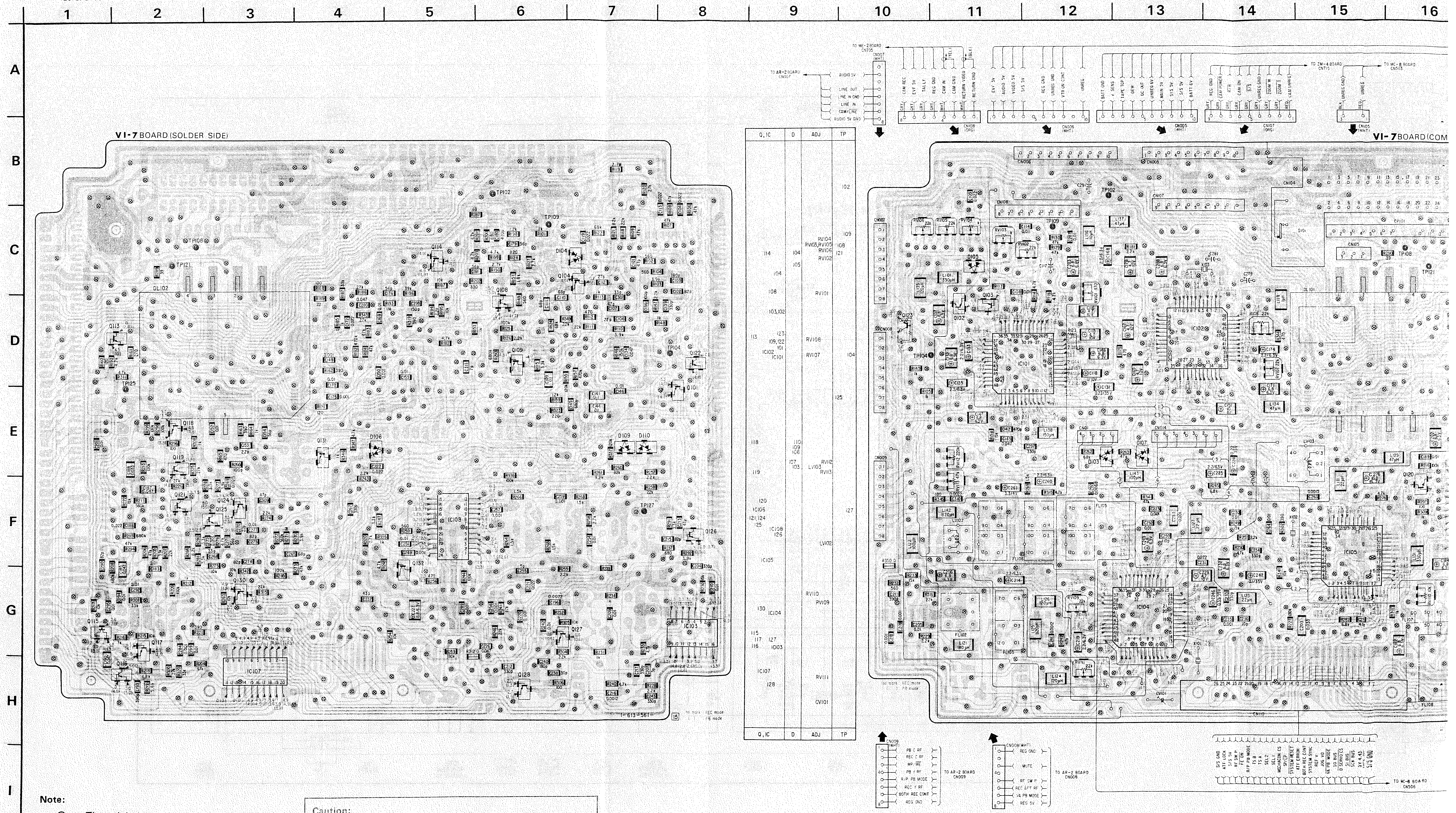
31
32
33
34
35
A
B
C
D
E
F
G
H
I
J

# VIDEO

## VI-7 (Y & CHROMA SIGNAL PROCESS, PB PROCESS), FU-34 (FUSE), HS-5 (TAPE SENSOR, SWITCH), FE-4 (FLYING ERASE), EX-3 (TUNING EXPANDER, EQ, ED SWITCH), TK-2 (SWITCH) PRINTED WIRING BOARDS

– Ref. No. FU-34 BOARD : 5000 series, HS-5 BOARD : 6000 series, VI-7, EX-3, TK-2 BOARD : 7000 series, FE-4 BOARD : 8000 series –


1
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3
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11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
VI-7 BOARD (SOLDER SIDE)
VI-7 BOARD (COM
Q, IC
D
ADJ
TP
TO ME-2 BOARD CN705
TO AR-2 BOARD CN907
TO ZM-4 BOARD CN715
TO MC-8 BOARD CN503
TO AR-2 BOARD CN009
TO AR-2 BOARD CN008
TO MC-8 BOARD CN506
CN007
CN108
CN106
CN005
CN107
CN105
CN009
CN008
DL102
DL101
IC101
IC102
IC103
IC104
IC105
IC107
IC108

Note:

- ⊗ : Through hole.
- ▨ : pattern from the side which enables seeing.
- ▨ : B+ pattern from the side which enables seeing.
- ▨ : pattern of the rear side.

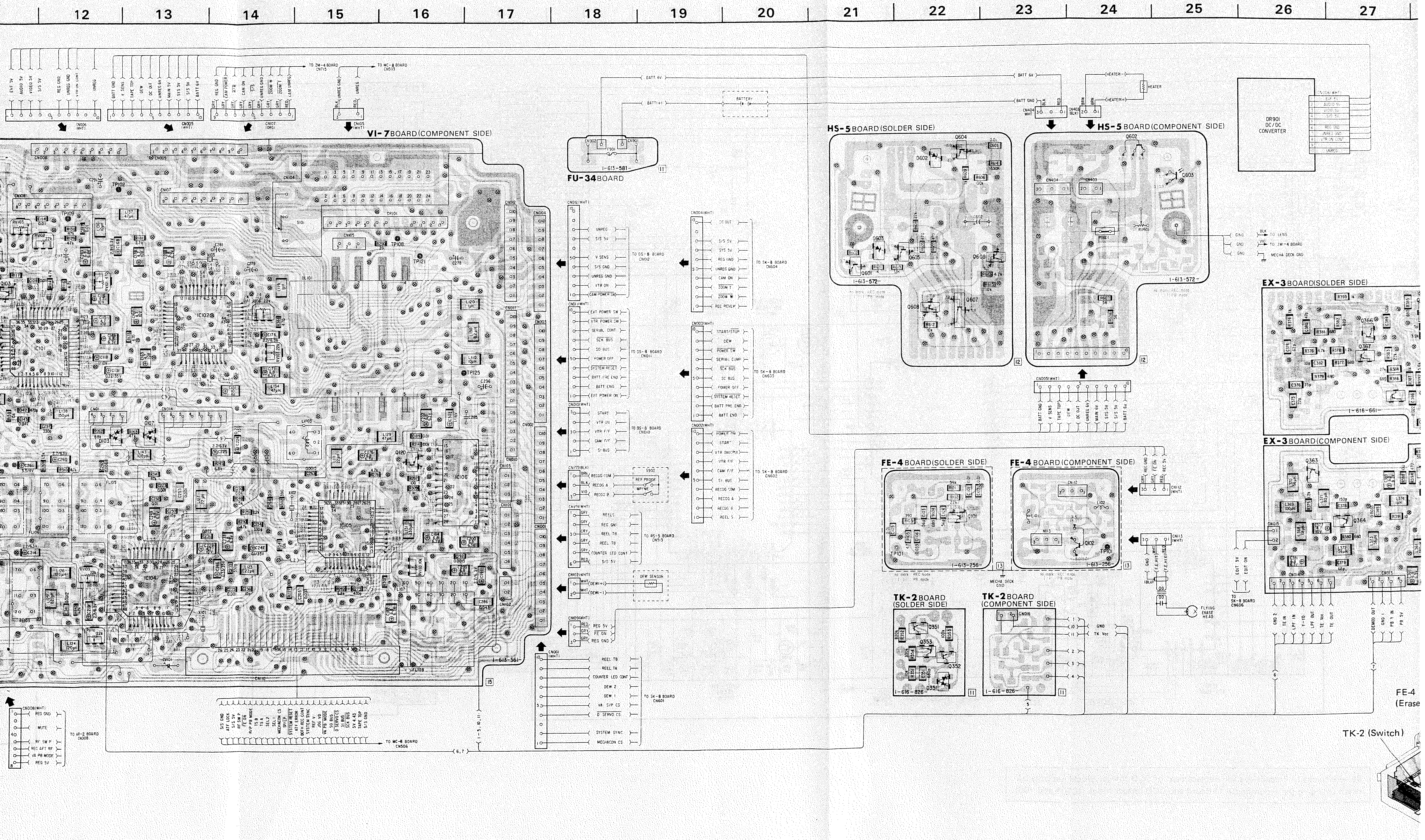
Caution:

Pattern face side: (Solder Side) Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) Parts on the parts face side seen from the part face are indicated.

When indicating parts by reference number, please include the board name.

## , ED SWITCH), TK-2 (SWITCH) PRINTED WIRING BOARDS


12
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14
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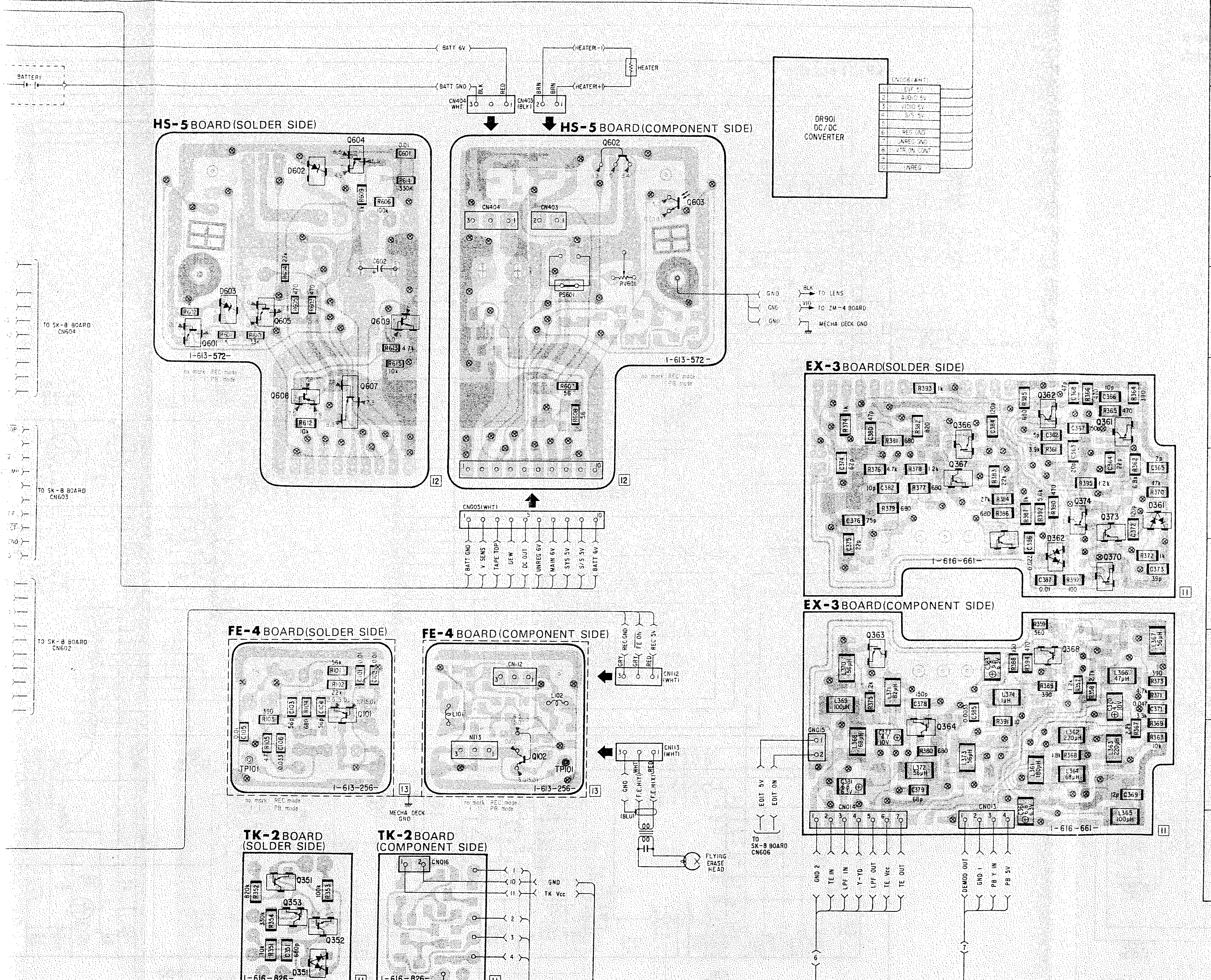
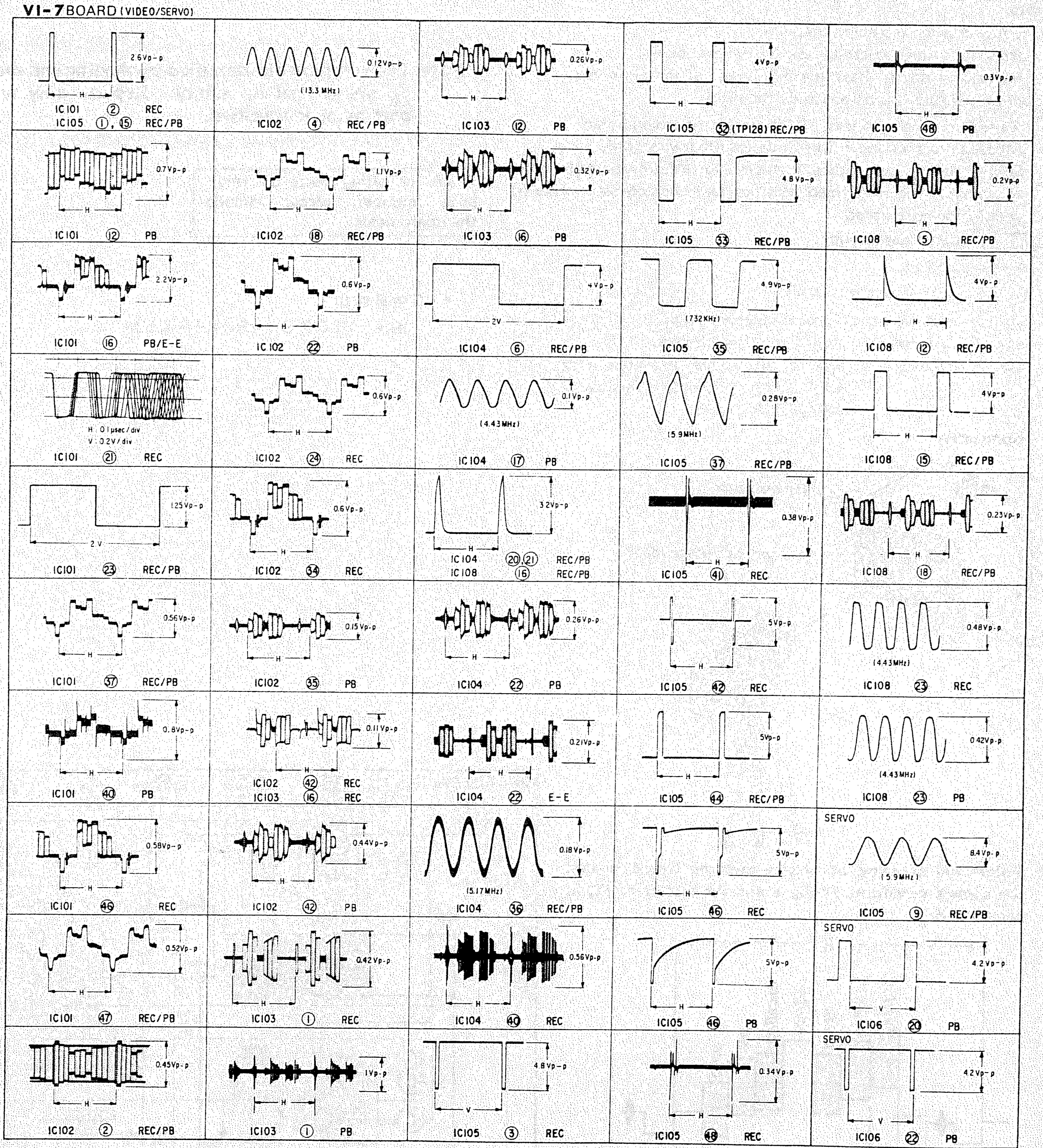
21
22
23
24
25
26
27
VI-7 BOARD (COMPONENT SIDE)
1-613-561
FU-34 BOARD
1-613-581
HS-5 BOARD (SOLDER SIDE)
1-613-572
HS-5 BOARD (COMPONENT SIDE)
1-613-572
DR901 DC/DC CONVERTER
EX-3 BOARD (SOLDER SIDE)
1-616-661
EX-3 BOARD (COMPONENT SIDE)
FE-4 BOARD (SOLDER SIDE)
1-613-256
FE-4 BOARD (COMPONENT SIDE)
1-613-256
TK-2 BOARD (SOLDER SIDE)
1-616-826
TK-2 BOARD (COMPONENT SIDE)
1-616-826
BATTERY
HEATER
FLYING ERASE HEAD
MECHA DECK GND
DEW SENSOR
REF PROOF MP/ME
TO ZM-4 BOARD CN715
TO MC-8 BOARD CN503
TO DS-8 BOARD CN012
TO DS-8 BOARD CN011
TO DS-8 BOARD CN010
TO SK-8 BOARD CN604
TO SK-8 BOARD CN603
TO SK-8 BOARD CN602
TO SK-8 BOARD CN601
TO SK-8 BOARD CN606
TO RS-5 BOARD CN513
TO MC-8 BOARD CN506
TO AF-2 BOARD CN005
FE-4 (Erase
TK-2 (Switch)

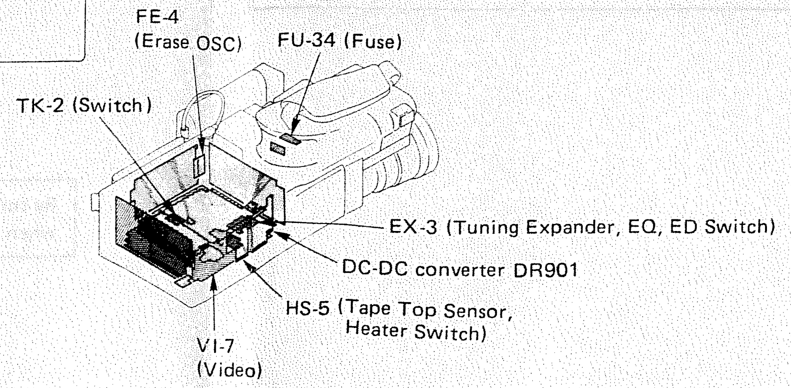
20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35


HS-5 BOARD (SOLDER SIDE)
HS-5 BOARD (COMPONENT SIDE)
1-613-572-
BATT 5V
BATT GND
BATTERY
HEATER
CN404
CN403
DR901 DC/DC CONVERTER
GND
TO LENS
TO ZM-4 BOARD
MECHA DECK GND
TO SK-8 BOARD CN604
TO SK-8 BOARD CN603
TO SK-8 BOARD CN602
CN005 (WHT)
EX-3 BOARD (SOLDER SIDE)
EX-3 BOARD (COMPONENT SIDE)
1-616-661-
FE-4 BOARD (SOLDER SIDE)
FE-4 BOARD (COMPONENT SIDE)
1-613-256-
CN112 (WHT)
CN113 (WHT)
MECHA DECK GND
FLYING ERASE HEAD
TO SK-8 BOARD CN606
EDIT 5V
EDIT ON
TK-2 BOARD (SOLDER SIDE)
TK-2 BOARD (COMPONENT SIDE)
1-616-826-
GND
TK Vcc

**VI-7** BOARD (VIDEO/SERVO)


2.6Vp-p
H
IC101 ② REC
IC105 ①, ⑮ REC/PB
0.12Vp-p
(13.3 MHz)
IC102 ④ REC/PB
0.26Vp-p
IC103 ⑫ PB
4Vp-p
IC105 ㉜ (TP128) REC/PB
0.3Vp-p
IC105 ㊽ PB
0.7Vp-p
IC101 ⑫ PB
1.1Vp-p
IC102 ⑱ REC/PB
0.32Vp-p
IC103 ⑯ PB
4.8Vp-p
IC105 ㉝ REC/PB
0.2Vp-p
IC108 ⑤ REC/PB
2.2Vp-p
IC101 ⑯ PB/E-E
0.6Vp-p
IC102 ㉒ PB
4Vp-p
2V
IC104 ⑥ REC/PB
4.9Vp-p
(732KHz)
IC105 ㉟ REC/PB
4Vp-p
IC108 ⑫ REC/PB
H : 0.1μsec/div
V : 0.2V/div
IC101 ㉑ REC
0.6Vp-p
IC102 ㉔ REC
0.1Vp-p
(4.43MHz)
IC104 ⑰ PB
0.28Vp-p
(5.9MHz)
IC105 ㊲ REC/PB
4Vp-p
IC108 ⑮ REC/PB
1.25Vp-p
2V
IC101 ㉓ REC/PB
0.6Vp-p
IC102 ㉞ REC
3.2Vp-p
IC104 ⑳,㉑ REC/PB
IC108 ⑯ REC/PB
0.38Vp-p
IC105 ㊶ REC
0.23Vp-p
IC108 ⑱ REC/PB
0.56Vp-p
IC101 ㊲ REC/PB
0.15Vp-p
IC102 ㉟ PB
0.26Vp-p
IC104 ㉒ PB
5Vp-p
IC105 ㊷ REC
0.48Vp-p
(4.43MHz)
IC108 ㉓ REC
0.8Vp-p
IC101 ㊵ PB
0.11Vp-p
IC102 ㊷ REC
IC103 ⑯ REC
0.21Vp-p
IC104 ㉒ E-E
5Vp-p
IC105 ㊹ REC/PB
0.42Vp-p
(4.43MHz)
IC108 ㉓ PB
0.58Vp-p
IC101 ㊻ REC
0.44Vp-p
IC102 ㊷ PB
0.18Vp-p
(5.17MHz)
IC104 ㊱ REC/PB
5Vp-p
IC105 ㊻ REC
SERVO
8.4Vp-p
(5.9MHz)
IC105 ⑨ REC/PB
0.52Vp-p
IC101 ㊼ REC/PB
0.42Vp-p
IC103 ① REC
0.56Vp-p
IC104 ㊵ REC
5Vp-p
IC105 ㊻ PB
SERVO
4.2Vp-p
V
IC106 ⑳ PB
0.45Vp-p
IC102 ② REC/PB
1Vp-p
IC103 ① PB
4.8Vp-p
V
IC105 ③ REC
0.34Vp-p
IC105 ㊽ REC
SERVO
4.2Vp-p
IC106 ㉒ PB

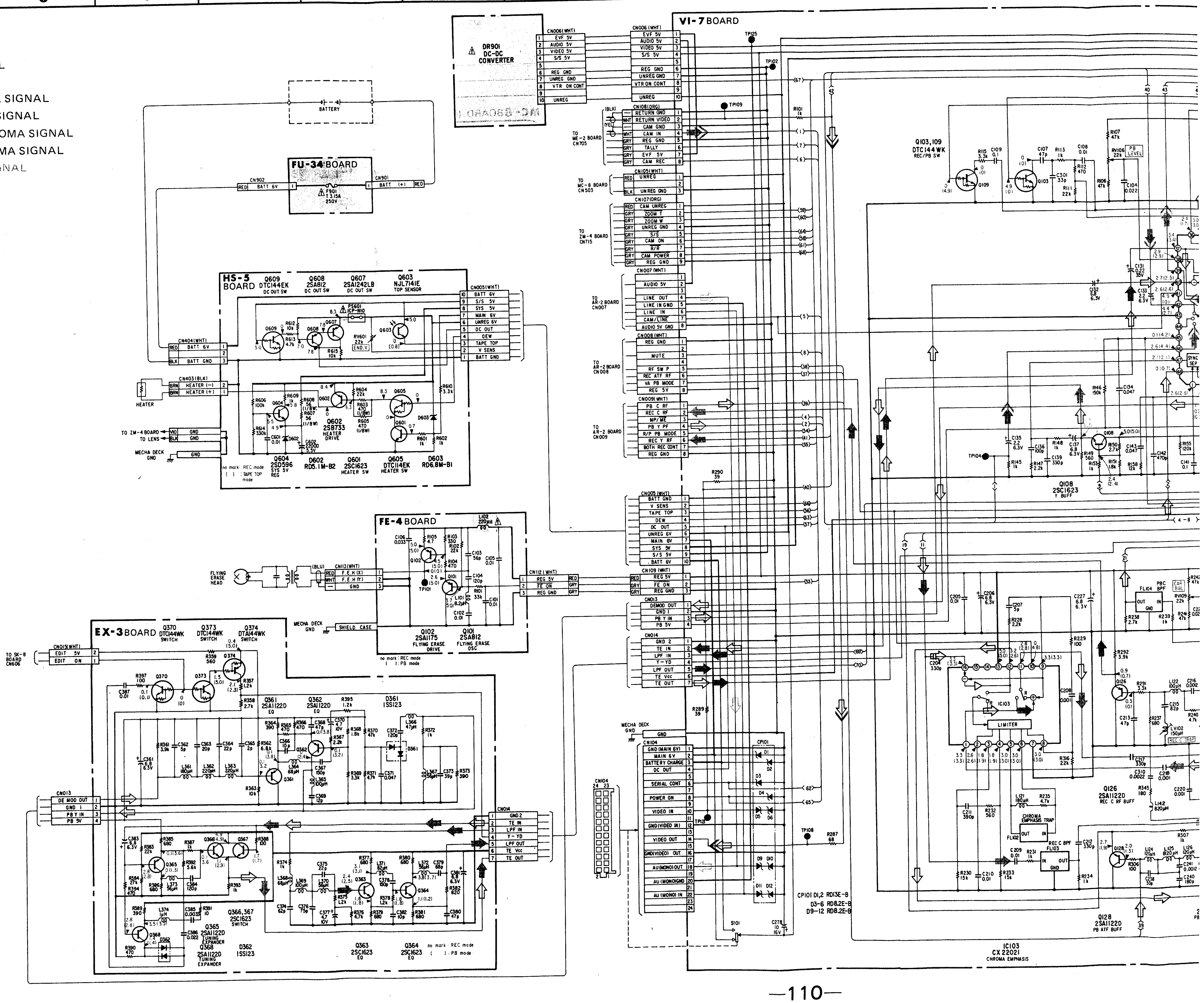
A B C D E F G H I J


FE-4 (Erase OSC)
FU-34 (Fuse)
TK-2 (Switch)
EX-3 (Tuning Expander, EQ, ED Switch)
DC-DC converter DR901
HS-5 (Tape Top Sensor, Heater Switch)
VI-7 (Video)

## VI-7 (Y & CHROMA SIGNAL PROCESS, PB PROCESS), FU-34 (FUSE), HS-5 (TAPE SENSOR, SWITCH), FE-4 (FLYING ERASE), EX-3 (TUNING EXPANDER, EQ, ED SWITCH), TK-2 (SWITCH) SCHEMATIC DIAGRAM

– Ref. No. FU-34 BOARD : 5000 series, HS-5 BOARD : 6000 series, VI-7, EX-3, TK-2 BOARD : 7000 series, FE-4 BOARD : 8000 series –

- Signal path
  - ➡ : REC Y SIGNAL
  - ⇨ : PB Y SIGNAL
  - ➡ : REC CHROMA SIGNAL
  - ⇨ : PB CHROMA SIGNAL
  - ➡ : REC Y & CHROMA SIGNAL
  - ⇨ : PB Y & CHROMA SIGNAL
  - ⇨ : PB AUDIO SIGNAL



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
DR901 DC-DC CONVERTER
BATTERY
FU-34 BOARD
F901 T3.15A 250V
HS-5 BOARD
Q609 DTC144EK DC OUT SW
Q608 2SA812 DC OUT SW
Q607 2SA1242LB DC OUT SW
Q603 NJL7141E TOP SENSOR
Q604 2SD596 SYS 5V REG
D602 RD5.1M-B2
Q601 2SC1623 HEATER SW
Q605 DTC114EK HEATER SW
D603 RD6.8M-B1
HEATER
FE-4 BOARD
FLYING ERASE HEAD
Q102 2SA1175 FLYING ERASE DRIVE
Q101 2SA812 FLYING ERASE OSC
EX-3 BOARD
Q370 DTC144WK SWITCH
Q373 DTC144WK SWITCH
Q374 DTA144WK SWITCH
Q361 2SA1220 EQ
Q362 2SA1220 EQ
D361 1SS123
Q366,367 2SC1623 SWITCH
Q368 2SA1220 TUNING EXPANDER
D362 1SS123
Q363 2SC1623 EQ
Q364 2SC1623 EQ
VI-7 BOARD
Q103,109 DTC144WK REC/PB SW
Q108 2SC1623 Y BUFF
Q126 2SA1220 REC C RF BUFF
Q128 2SA1220 PB ATF BUFF
IC103 CX22021 CHROMA EMPHASIS
LIMITER
CP101 D1,2 RD13E-B D3-6 RD8.2E-B D9-12 RD8.2E-B
TO ME-2 BOARD CN705
TO MC-8 BOARD CN503
TO ZM-4 BOARD CN715
TO AR-2 BOARD CN007
TO AR-2 BOARD CN008
TO AR-2 BOARD CN009
TO ZM-4 BOARD TO LENS
TO SK-8 BOARD CN606
MECHA DECK GND
no mark : REC mode ( ) : PB mode

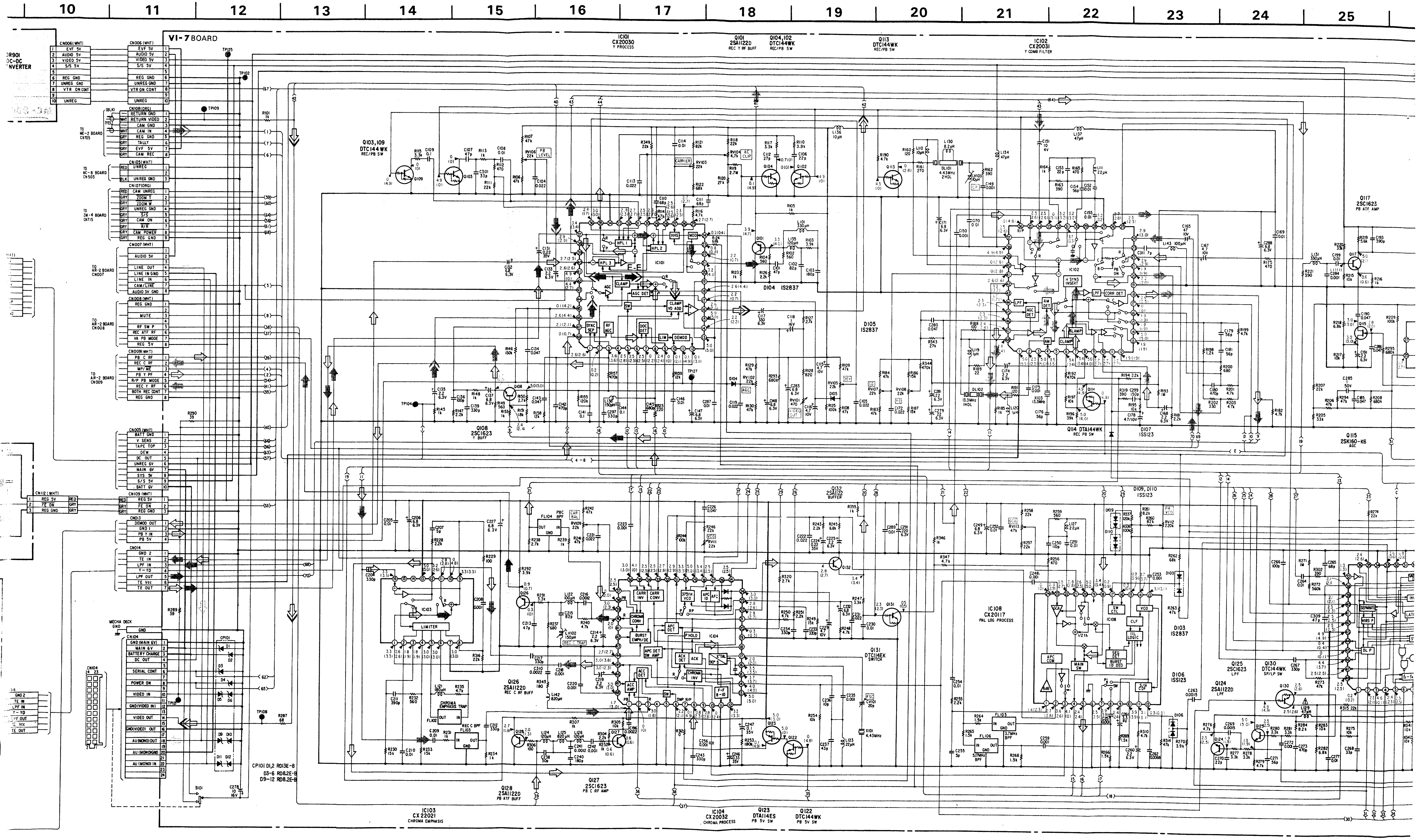
> **Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

When indicating parts by reference number, please include the board name.

**Note:**

- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ——— : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box colour bars.
  - (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

# NING EXPANDER, EQ, ED SWITCH), TK-2 (SWITCH) SCHEMATIC DIAGRAM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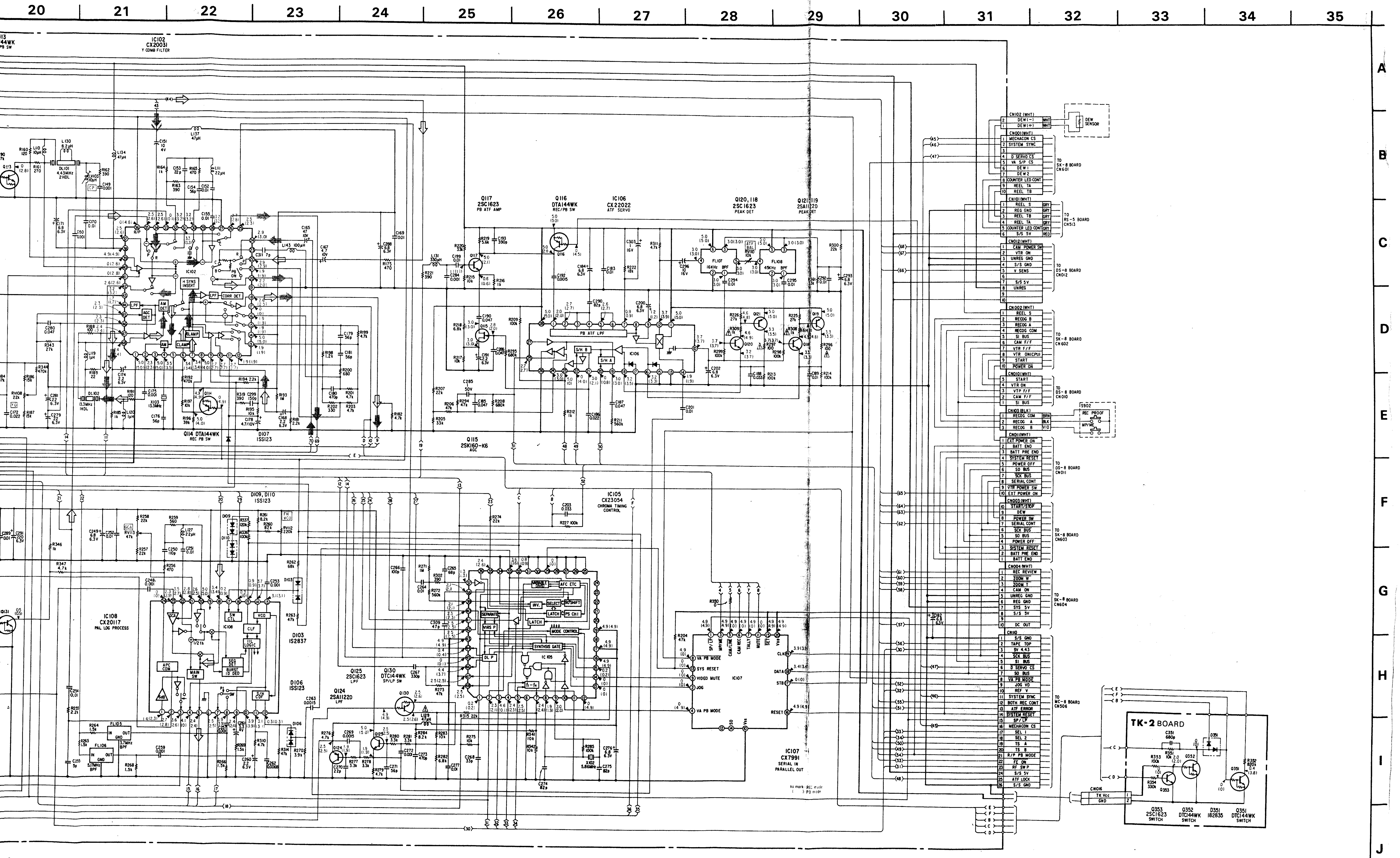
VI-7 BOARD
DR901 DC-DC CONVERTER
CN006 (WHT)
EVF 5V
AUDIO 5V
VIDEO 5V
S/S 5V
REG GND
UNREG GND
VTR ON CONT
UNREG
TO ME-2 BOARD CN705
TO NC-8 BOARD CN503
TO ZM-4 BOARD CN715
TO AR-2 BOARD CN007
TO AR-2 BOARD CN008
TO AR-2 BOARD CN009
IC101 CX20030 Y PROCESS
Q101 2SA1122D REC Y RF BUFF
Q104,102 DTC144WK REC/PB SW
Q113 DTC144WK REC/PB SW
IC102 CX20031 Y COMB FILTER
Q103,109 DTC144WK REC/PB SW
Q117 2SC1623 PB ATF AMP
Q108 2SC1623 Y BUFF
D104 1S2837
D105 1S2837
Q114 DTA144WK REC PB SW
Q107 1SS123
Q115 2SK160-K6 AGC
Q132 2SA1122 BUFFER
D109, D110 1SS123
IC108 CX20117 PAL LOG PROCESS
D103 1S2837
D106 1SS123
Q125 2SC1623 LPF
Q124 2SA1122D LPF
Q130 DTC144WK SP/LP SW
Q131 DTC114EK SWITCH
Q126 2SA1122D REC C RF BUFF
Q127 2SC1623 PB C RF AMP
Q128 2SA1122D PB ATF BUFF
IC103 CX22021 CHROMA EMPHASIS
IC104 CX20032 CHROMA PROCESS
Q123 DTA114ES PB 5V SW
Q122 DTC144WK PB 5V SW
CP101 D1,2 RD13E-B
D3-6 RD8.2E-B
D9-12 RD8.2E-B
MECHA DECK GND
CN104
S101
TP102
TP104
TP108
TP109
TP125
TP127
LIMITER
CHROMA EMPHASIS TRAP
X101 4.43MHz
X103 13.3MHz
DL101 4.43MHz 2HOL
DL102 13.3MHz 1HDL
FL104 PBC BPF
FL105 3.7MHz BPF
FL106 3.7MHz BPF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A
B
C
D
E
F
G
H
I
J
IC102
CX20031
Y COMB FILTER
Q113
DTC144WK
PB SW
DL101
4.43MHz
2HDL
DL102
3.3MHz
1HDL
Q114 DTA144WK
REC PB SW
D107
1SS123
Q117
2SC1623
PB ATF AMP
Q116
DTA144WK
REC/PB SW
IC106
CX22022
ATF SERVO
Q120, 118
2SC1623
PEAK DET
Q121, 119
2SA1122D
PEAK DET
FL107
16KHz BPF
FL108
45KHz BPF
PB ATF LPF
Q115
2SK160-K6
AGC
IC105
CX23054
CHROMA TIMING
CONTROL
D109, D110
1SS123
IC108
CX20117
PAL LOG PROCESS
D103
1S2837
D106
1SS123
Q125
2SC1623
LPF
Q124
2SA1122D
LPF
Q130
DTC144WK
SP/LP SW
FL105
3.7MHz
BPF
FL106
5.17MHz
BPF
X102
5.86MHz
IC107
CX7991
SERIAL IN
PARALLEL OUT
VA PB MODE
SYS RESET
VIDEO MUTE
JOG
CLK
DATA
STB
RESET
no mark : REC mode
( ) : PB mode
CN102 (WHT)
2 DEW(-) WHT
1 DEW(+) WHT
DEW SENSOR
CN001(WHT)
1 MECHACON CS
2 SYSTEM SYNC
3
4 D SERVO CS
5 VA S/P CS
6 DEW 1
7 DEW 2
8 COUNTER LED CONT
9 REEL TA
10 REEL TB
TO SK-8 BOARD CN601
CN101(WHT)
1 REEL S GRY
2 REG GND GRY
3 REEL TB GRY
4 REEL TA GRY
5 COUNTER LED CONT GRY
6 S/S 5V RED
TO RS-5 BOARD CN513
CN012(WHT)
1 CAM POWER SW
2 VTR ON
3 UNREG GND
4 S/S GND
5 V SENS
6
7 S/S 5V
8 UNREG
9
10
TO DS-8 BOARD CN012
CN002(WHT)
1 REEL S
2 RECOG B
3 RECOG A
4 RECOG COM
5 SI BUS
6 CAM F/F
7 VTR F/F
8 VTR ON(CPU)
9 START
10 POWER ON
TO SK-8 BOARD CN602
CN010(WHT)
5 START
4 VTR ON
3 VTP F/F
2 CAM F/F
1 SI BUS
TO DS-8 BOARD CN010
CN103(BLK)
1 RECOG COM BRN
2 RECOG A BLK
3 RECOG B VIO
S902
REC PROOF
MP/ME
CN011(WHT)
1 EXT POWER ON
2 BATT END
3 BATT PRE END
4 SYSTEM RESET
5 POWER OFF
6 SO BUS
7 SCK BUS
8 SERIAL CONT
9 VTR POWER SW
10 EXT POWER ON
TO DS-8 BOARD CN011
CN003(WHT)
10 START/STOP
9 DEW
8 POWER SW
7 SERIAL CONT
6 SCK BUS
5 SO BUS
4 POWER OFF
3 SYSTEM RESET
2 BATT PRE END
1 BATT END
TO SK-8 BOARD CN603
CN004(WHT)
1 REC REVIEW
2 ZOOM W
3 ZOOM T
4 CAM ON
5 UNREG GND
6 REG GND
7 SYS 5V
8 S/S 5V
9
10 DC OUT
TO SK-8 BOARD CN604
CN110
1 S/S GND
2 TAPE TOP
3 SV 4.43
4 SCK BUS
5 SI BUS
6 D SERVO CS
7 SO BUS
8 VA PB MODE
9 JOG VD
10 REF V
11 SYSTEM SYNC
12 BOTH REC CONT
13 ATF ERROR
14 SYSTEM RESET
15 SP/LP
16 MECHACON CS
17 SEL 1
18 SEL 2
19 TS A
20 TS B
21 R/P PB MODE
22 FE ON
23 RF SW P
24 S/S 5V
25 ATF LOCK
26 S/S GND
TO MC-8 BOARD CN506
CN016
1 TK Vcc
2 GND
TK-2 BOARD
C351 680p
R351 10k
R353 100k
R354 330k
R352 820k
D351
Q353 2SC1623 SWITCH
Q352 DTC144WK SWITCH
D351 1S2835
Q351 DTC144WK SWITCH

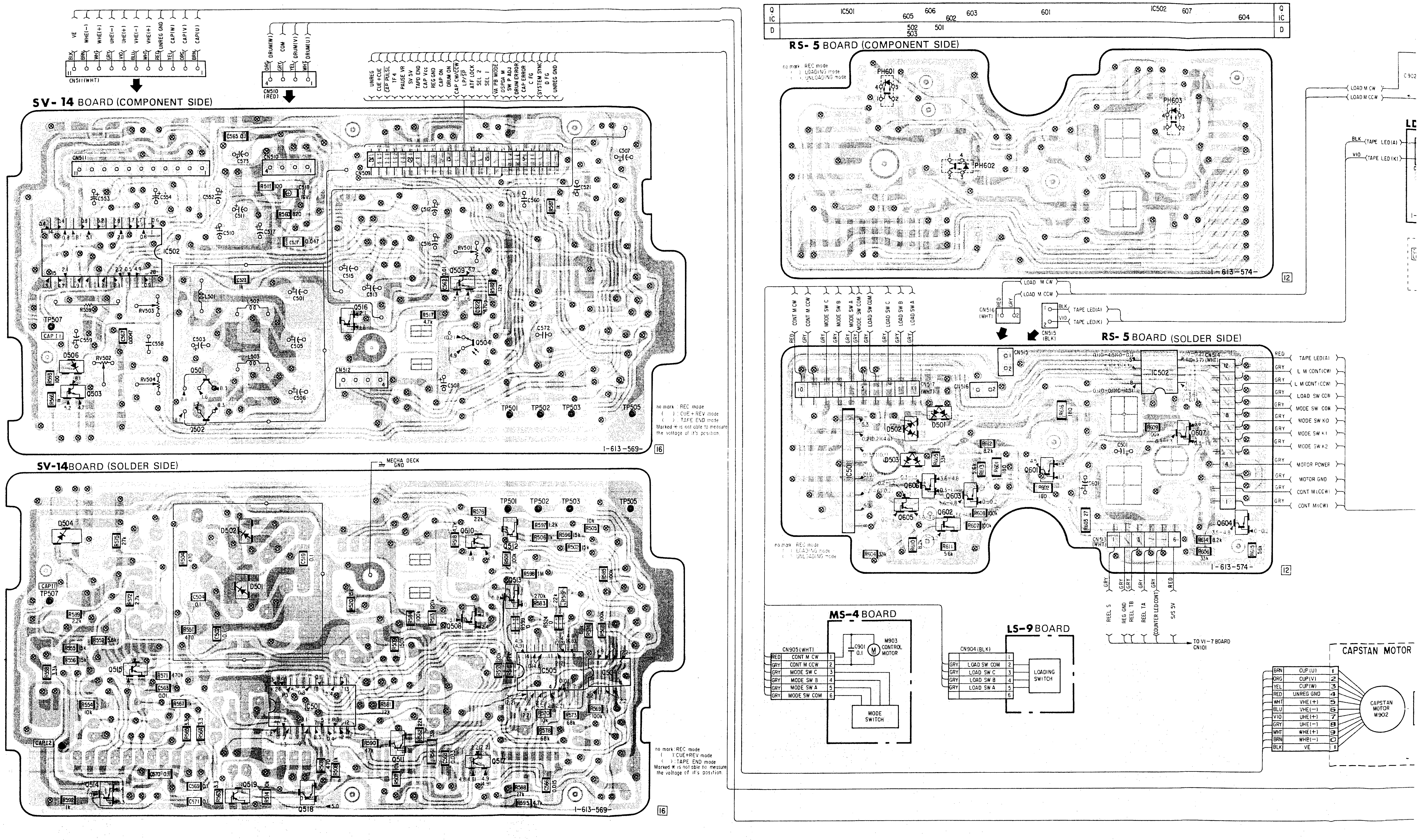
## SERVO/MECHANISM CONTROL

**MC-8 (SERVO, MECHANISM CONTROL), SV-14 (DRUM MOTOR/CAPSTAN MOTOR DRIVE), MS-4 (MODE SWITCH, MODE CONTROL MOTOR), LS-9 (LOADING SWITCH), LD-1 (TAPE SENSOR LED), RS-5 (LOADING MOTOR/CONTROL MO**

– Ref. No. SV-14, MS-4, LS-9, LD-1 BOARD : 5000 series, MC-8 BOARD : 7000 series, RS-5 BOARD 8000 series –

| | Q, IC | D | ADJ | TP |
|---|---|---|---|---|
| C | IC502 | | RV501 | |
| C | 509 | | | |
| D | | | RV503 | |
| D | 516 | | | 507 |
| D | 504 | | | |
| D | 506 | | RV502 | |
| D | 501 | | RV504 | |
| E | 503 | | | |
| E | 502 | | | 501,502<br>503,505 |
| F | | | | 501,502<br>503,505 |
| F | 512 | 504 | | |
| F | 510 | 502 | | |
| G | 513 | 501 | | 507 |
| G | 508 | | | |
| G | 515 | | | |
| H | IC505<br>IC504 | | | |
| H | IC501 | | | |
| H | 511<br>517 | | | |
| I | 514, 518<br>519 | | | |
| | Q, IC | D | ADJ | TP |

| | 10 | 11 | 12 | 13 | 14 | 15 | |
|---|---|---|---|---|---|---|---|
| Q<br>IC | IC501 | 605 606 602 603 | | 601 | IC502 607 | 604 | Q<br>IC |
| D | | 502 501<br>503 | | | | | D |



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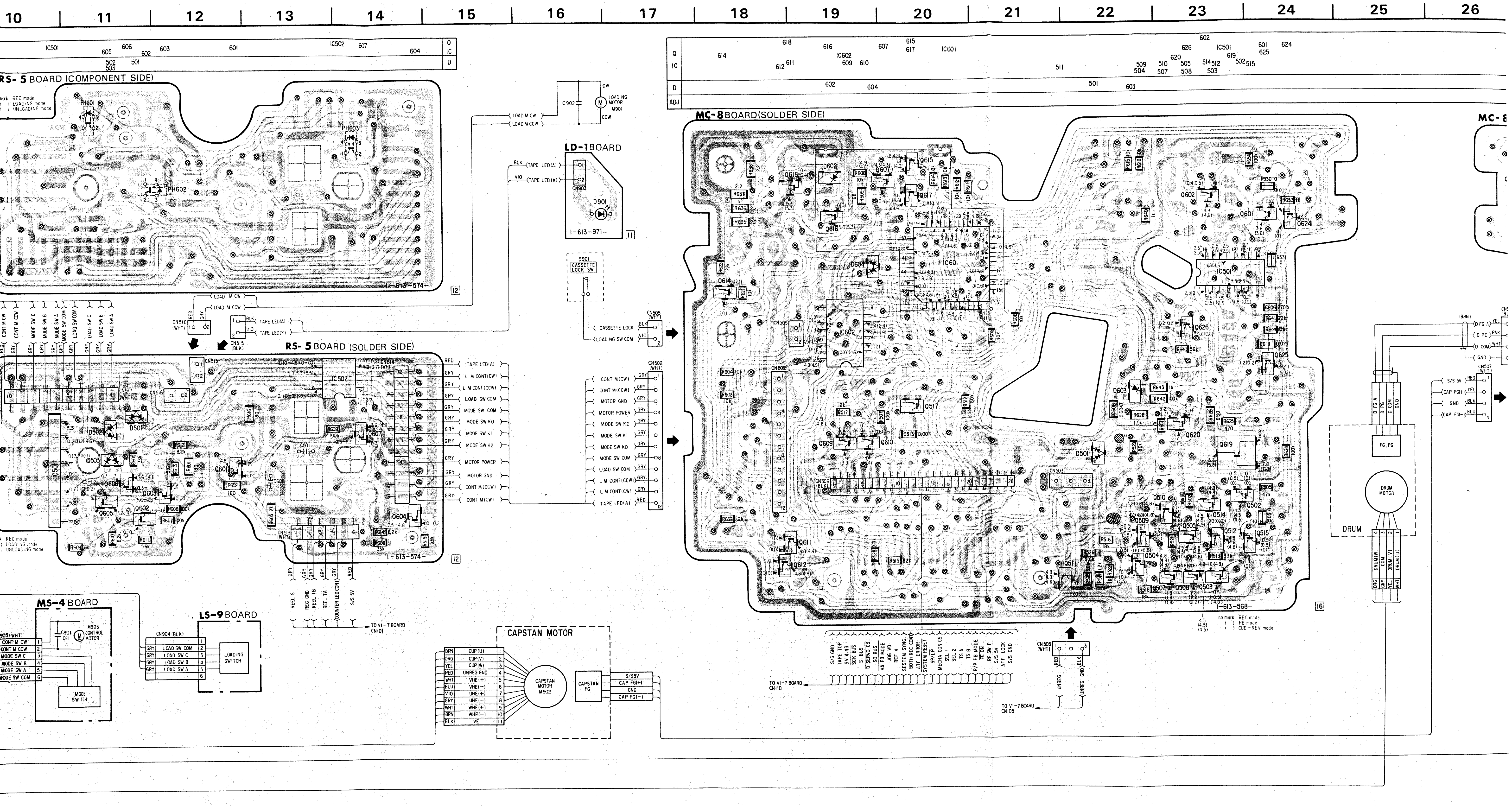
H
I
J
SV-14 BOARD (COMPONENT SIDE)
SV-14 BOARD (SOLDER SIDE)
CN511 (WHT)
CN510 (RED)
CN509
CN512
VE
WHE(−)
WHE(+)
UHE(−)
UHE(+)
VHE(−)
VHE(+)
UNREG GND
CAP(W)
CAP(V)
CAP(U)
DRUM(W)
COM
DRUM(V)
DRUM(U)
UNREG
CUE+CUE
CAP PULSE
TF 4
PAUSE V/I
SV 5V
TAPE END
CAP Vcc
REG GND
CAP ON
DRUM ON
CAP CW/CCW
LP/SP
ATF LOCK
SEL 2
SEL 1
VA PB MODE
DISTOR M
SW P ADJ
DRUM ERROR
CAP ERROR
C FG
SYSTEM SYNC
D FG
UNREG GND
IC502
IC501
IC504
IC505
TP501
TP502
TP503
TP505
TP507
RV501
RV502
RV503
RV504
MECHA DECK GND
no mark : REC mode
( ) : CUE+REV mode
〈 〉 : TAPE END mode
Marked ✱ is not able to measure the voltage of it's position.
1-613-569-
16
RS-5 BOARD (COMPONENT SIDE)
RS-5 BOARD (SOLDER SIDE)
no mark : REC mode
( ) : LOADING mode
〈 〉 : UNLOADING mode
PH601
PH602
PH603
1-613-574-
12
LOAD M CW
LOAD M CCW
TAPE LED(A)
TAPE LED(K)
CN516 (WHT)
CN515 (BLK)
CN514 (WHT)
CN513 (WHT)
CN517 (WHT)
CONT M CW
CONT M CCW
MODE SW C
MODE SW B
MODE SW A
MODE SW COM
LOAD SW COM
LOAD SW C
LOAD SW B
LOAD SW A
L. M CONT(CW)
L. M CONT(CCW)
LOAD SW COM
MODE SW COM
MODE SW KO
MODE SW K1
MODE SW K2
MOTOR POWER
MOTOR GND
CONT M(CCW)
CONT M(CW)
REEL S
REG GND
REEL TB
REEL TA
COUNTER LED(CONT)
S/S SV
TO VI-7 BOARD CN101
MS-4 BOARD
CN905 (WHT)
C901 0.1
M903 CONTROL MOTOR
MODE SWITCH
LS-9 BOARD
CN904 (BLK)
LOADING SWITCH
CAPSTAN MOTOR
CAPSTAN MOTOR M902
CUP(U)
CUP(V)
CUP(W)
UNREG GND
VHE(+)
VHE(−)
UHE(+)
UHE(−)
WHE(+)
WHE(−)
VE
LD
BLK
VIO
RED
GRY
WHT
YEL
BRN
ORG
BLU

**Note:**

- ⊗ : Through hole.
- ▨ : pattern from the side which enables seeing.
- ▨ : B+ pattern from the side which enables seeing.
- ▨ : pattern of the rear side.

R), LS-9 (LOADING SWITCH), LD-1 (TAPE SENSOR LED), RS-5 (LOADING MOTOR/CONTROL MOTOR DRIVE) PRINTED WIRING BOARDS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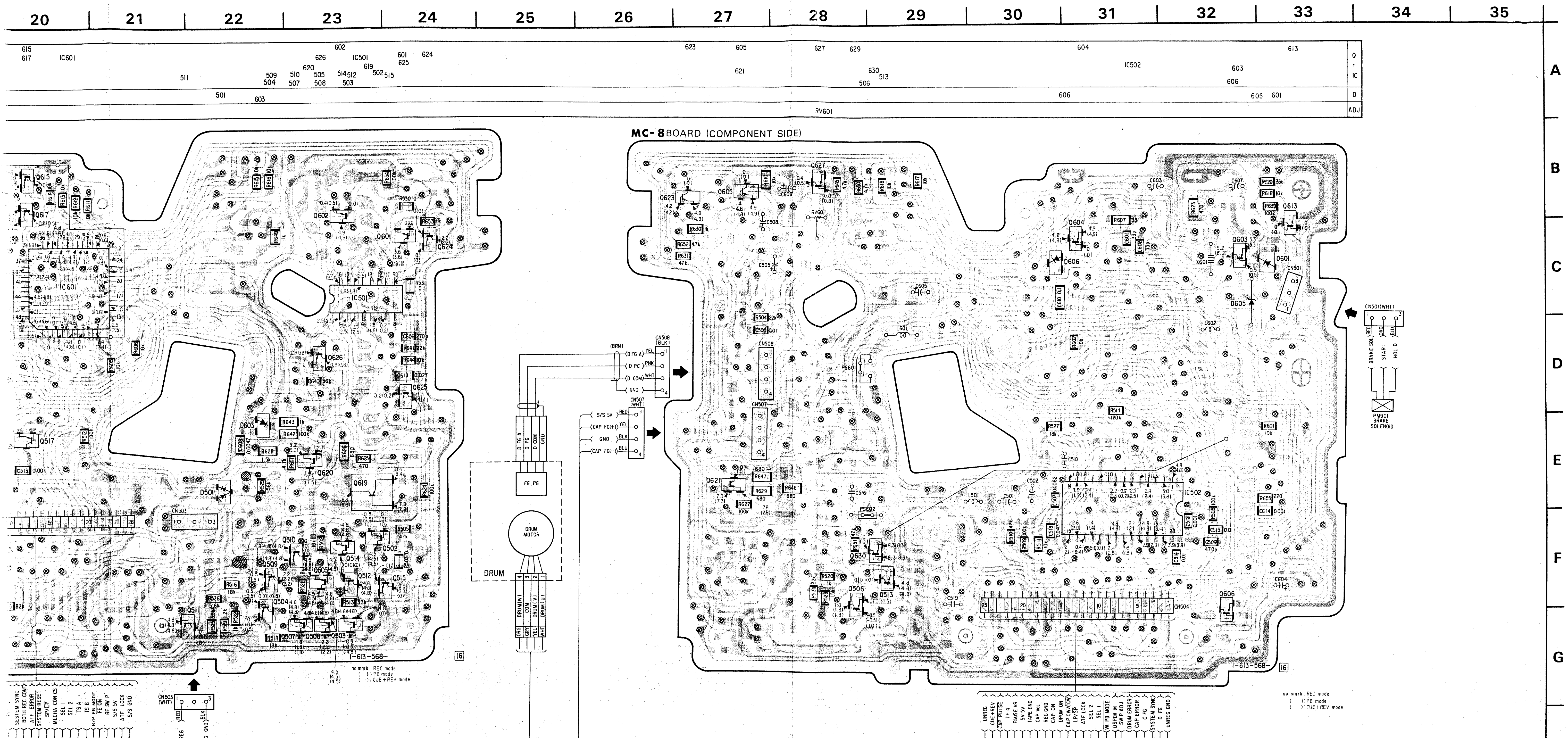
RS-5 BOARD (COMPONENT SIDE)
RS-5 BOARD (SOLDER SIDE)
LD-1 BOARD
MC-8 BOARD (SOLDER SIDE)
MS-4 BOARD
LS-9 BOARD
CAPSTAN MOTOR
DRUM
LOADING MOTOR M901
CASSETTE LOCK SW S901
CAPSTAN MOTOR M902
CAPSTAN FG
DRUM MOTOR
FG, PG
MODE SWITCH
LOADING SWITCH
CONTROL MOTOR M903
1-613-574-
1-613-971-
1-613-568-
TO VI-7 BOARD CN101
TO VI-7 BOARD CN110
TO VI-7 BOARD CN105
no mark : REC mode
( ) : PB mode
( ) : CUE+REV mode


MC-8 BOARD (COMPONENT SIDE)
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A
B
C
D
E
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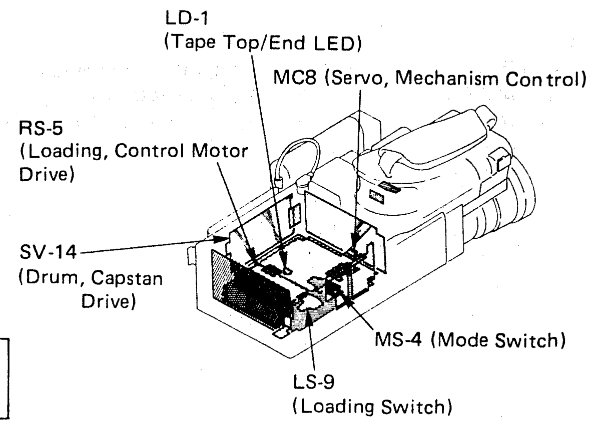
G
H
Q
IC
D
ADJ
IC601
IC501
IC502
RV601
CN501 (WHT)
BRAKE SOL
START
HOL D
PM901 BRAKE SOLENOID
CN503 (WHT)
UNREG
UNREG GND
TO VI-7 BOARD CN105
CN508 (BLK)
CN507 (WHT)
D FG A
D PG
D COM
GND
S/S 5V
CAP FG(+)
CAP FG(-)
FG, PG
DRUM MOTOR
DRUM
CN504
1-613-568-
no mark : REC mode
( ) : PB mode
( ) : CUE+REV mode


LD-1
(Tape Top/End LED)
MC8 (Servo, Mechanism Control)
RS-5
(Loading, Control Motor Drive)
SV-14
(Drum, Capstan Drive)
MS-4 (Mode Switch)
LS-9
(Loading Switch)

**Caution:**

| | |
|---|---|
| Pattern face side: (Solder Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component Side) | Parts on the parts face side seen from the part face are indicated. |

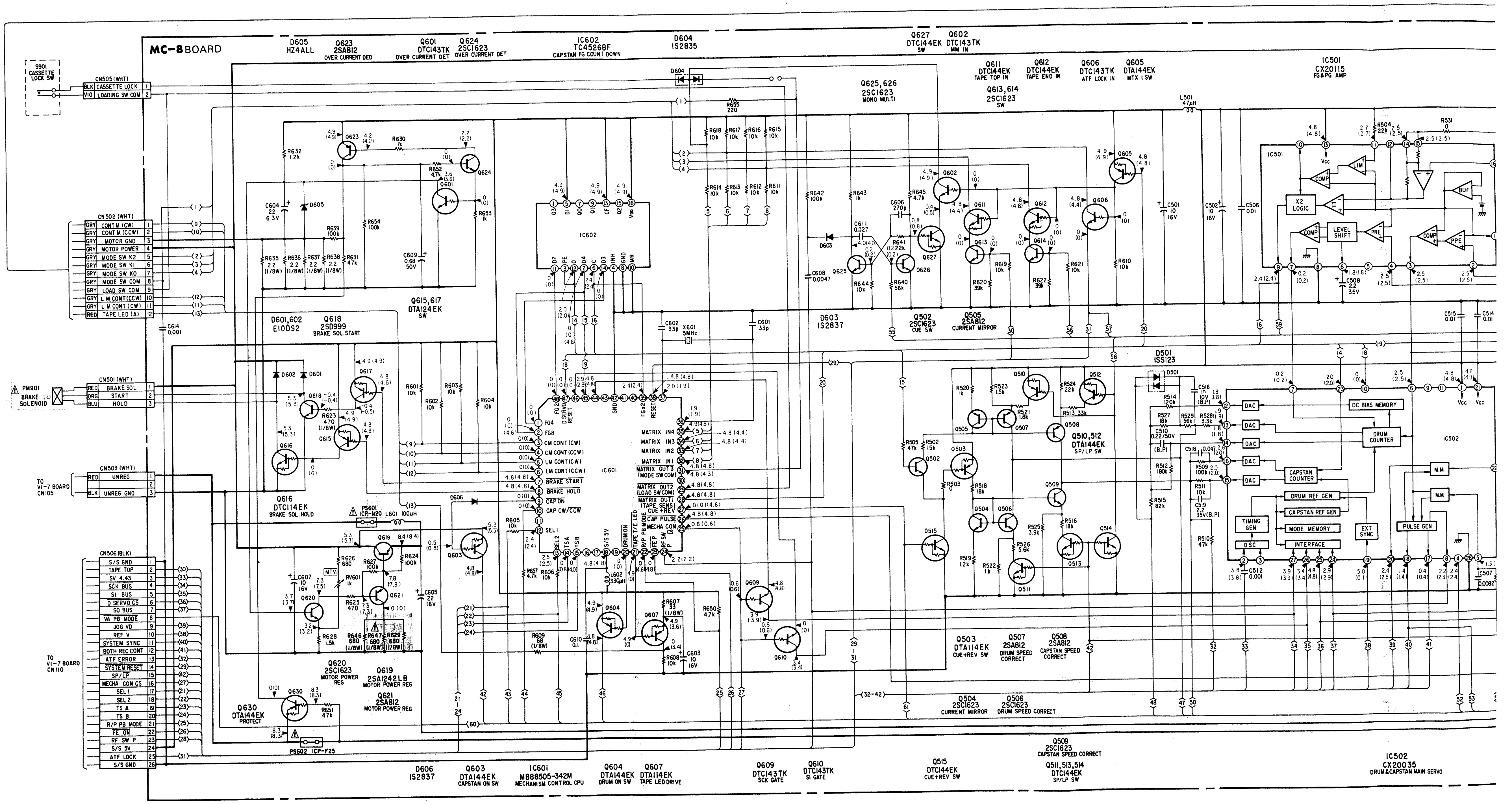
When indicating parts by reference number, please include the board name.

# SERVO/MECHANISM CONTROL

SERVO/MECHANISM CONTROL

MC-8 (SERVO, MECHANISM CONTROL), SV-14 (DRUM MOTOR/CAPSTAN MOTOR DRIVE), MS-4 (MODE SWITCH, MODE CONTROL MOTOR), LS-9 (LOADING SWITCH), LD-1 (TAPE SENSOR LED), RS-5 (LOADING MOTOR/CONTROL MOTOR DR

– Ref. No. SV-14, MS-4, LS-9, LD-1 BOARD : 5000 series, MC-8 BOARD : 7000 series, RS-5 BOARD 8000 series –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H
I
J
MC-8 BOARD
S901 CASSETTE LOCK SW
CN505 (WHT)
CASSETTE LOCK
LOADING SW COM
CN502 (WHT)
CONT M (CW)
CONT M (CCW)
MOTOR GND
MOTOR POWER
MODE SW K2
MODE SW K1
MODE SW K0
MODE SW COM
LOAD SW COM
L M CONT (CCW)
L M CONT (CW)
TAPE LED (A)
PM901 BRAKE SOLENOID
CN501 (WHT)
BRAKE SOL
START
HOLD
TO VI-7 BOARD CN105
CN503 (WHT)
UNREG
UNREG GND
CN506 (BLK)
S/S GND
TAPE TOP
SV 4.43
SCK BUS
SI BUS
D SERVO CS
SO BUS
VA PB MODE
JOG VD
REF V
SYSTEM SYNC
BOTH REC CONT
ATF ERROR
SYSTEM RESET
SP/LP
MECHA CON CS
SEL 1
SEL 2
TS A
TS B
R/P PB MODE
FE ON
RF SW P
S/S 5V
ATF LOCK
S/S GND
TO VI-7 BOARD CN110
D605 HZ4ALL
Q623 2SA812 OVER CURRENT DED
Q601 DTC143TK OVER CURRENT DET
Q624 2SC1623 OVER CURRENT DET
IC602 TC4526BF CAPSTAN FG COUNT DOWN
D604 1S2835
Q627 DTC144EK SW
Q602 DTC143TK MM IN
Q611 DTC144EK TAPE TOP IN
Q612 DTC144EK TAPE END IN
Q606 DTC143TK ATF LOCK IN
Q605 DTA144EK MTX 1 SW
Q613, 614 2SC1623 SW
Q625, 626 2SC1623 MONO MULTI
IC501 CX20115 FG&PG AMP
L501 47μH
D601, 602 E10DS2
Q618 2SD999 BRAKE SOL. START
Q615, 617 DTA124EK SW
D603 1S2837
Q502 2SC1623 CUE SW
Q505 2SA812 CURRENT MIRROR
D501 1SS123
IC601
Q616 DTC114EK BRAKE SOL. HOLD
PS601 ICP-N20
L601 100μH
Q620 2SC1623 MOTOR POWER REG
Q619 2SA1242LB MOTOR POWER REG
Q621 2SA812 MOTOR POWER REG
Q630 DTA144EK PROTECT
PS602 ICP-F25
D606 1S2837
Q603 DTA144EK CAPSTAN ON SW
IC601 MB88505-342M MECHANISM CONTROL CPU
Q604 DTA144EK DRUM ON SW
Q607 DTA114EK TAPE LED DRIVE
Q609 DTC143TK SCK GATE
Q610 DTC143TK SI GATE
Q515 DTC144EK CUE+REV SW
Q509 2SC1623 CAPSTAN SPEED CORRECT
Q511, 513, 514 DTC144EK SP/LP SW
IC502 CX20035 DRUM&CAPSTAN MAIN SERVO
Q503 DTA114EK CUE+REV SW
Q507 2SA812 DRUM SPEED CORRECT
Q508 2SA812 CAPSTAN SPEED CORRECT
Q504 2SC1623 CURRENT MIRROR
Q506 2SC1623 DRUM SPEED CORRECT
Q510, 512 DTA144EK SP/LP SW
X601 5MHz
DC BIAS MEMORY
DRUM COUNTER
CAPSTAN COUNTER
DRUM REF GEN
CAPSTAN REF GEN
MODE MEMORY
INTERFACE
TIMING GEN
OSC
EXT SYNC
PULSE GEN
DAC
MM
X2 LOGIC
LEVEL SHIFT
COMP
LIM
PPE
BUF
MATRIX IN4
MATRIX IN3
MATRIX IN2
MATRIX IN1
MATRIX OUT3 (MODE SW COM)
MATRIX OUT2 (LOAD SW COM)
MATRIX OUT1 (TAPE SENS)
CUE+REV
CAP PULSE
MECHA CON CS
CM CONT (CW)
CM CONT (CCW)
LM CONT (CW)
LM CONT (CCW)
BRAKE START
BRAKE HOLD
CAP ON
CAP CW/CCW
SEL1
FG4
FG8

## MC-8 BOARD

| REF | | LP REC | LP CUE+REV | SP REC | SP CUE+REV |
|---|---|---|---|---|---|
| Q502 | B | 0 | 0.6 | 0 | 0 6 |
| | C | 4.4 | 0 | 4.4 | 0 |
| | E | 4.8 | 0 | 4.8 | 0 |
| Q503 | B | 4.8 | — | 4.8 | — |
| | C | -0.3 | — | -0.3 | — |
| | E | 4.8 | — | 4.8 | — |
| Q504 | B | -0.3 | — | -0.3 | — |
| | C | -0.3 | — | -0.3 | — |
| | E | 0 | — | 0 | — |
| Q505 | B | 4.4 | 4.0 | 4.4 | 4.0 |
| | C | 4.4 | 4.6 | 4.4 | 4.6 |
| | E | 4.8 | 4.0 | 4.8 | 4.0 |
| Q506 | B | -0.3 | — | -0.3 | — |
| | C | 1.9 | — | 1.9 | — |
| | E | 0 | — | 0 | — |
| Q507 | B | 4.4 | — | 4.4 | — |
| | C | 1.9 | — | 1.9 | — |
| | E | 4.8 | — | 4.8 | — |
| Q508 | B | 4.4 | — | 4.4 | — |
| | C | 2.4 | — | 2.1 | — |
| | E | 4.8 | — | 4.8 | — |
| Q509 | B | -0.3 | — | -0.3 | — |
| | C | 2.4 | — | 2.1 | — |
| | E | 0 | — | 0 | — |
| Q510 | B | 4.8 | — | 0 | — |
| | C | 4.8 | — | 4.8 | — |
| | E | 4.8 | — | 4.8 | — |
| Q511 | B | 0 | — | 4.8 | — |
| | C | 0 | — | 0 | — |
| | E | GND | — | GND | — |
| Q512 | B | 4.8 | — | 0 | — |
| | C | 4.8 | — | 4.8 | — |
| | E | 4.8 | — | 4.8 | — |
| Q513 | B | 0 | — | 4.8 | — |
| | C | 0 | — | 0 | — |
| | E | GND | — | GND | — |
| Q514 | B | 0 | — | 4.8 | — |
| | C | 4.8 | — | 0 | — |
| | E | GND | — | GND | — |
| Q515 | B | 0 | 4.5 | 0 | 4.5 |
| | C | 4.8 | 0 | 4.8 | 0 |
| | E | GND | GND | GND | GND |
| Q517 | B | 0 | — | 4.8 | — |
| | C | 0.7 | — | 0 | — |
| | E | GND | — | GND | — |

**Note:**

- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.

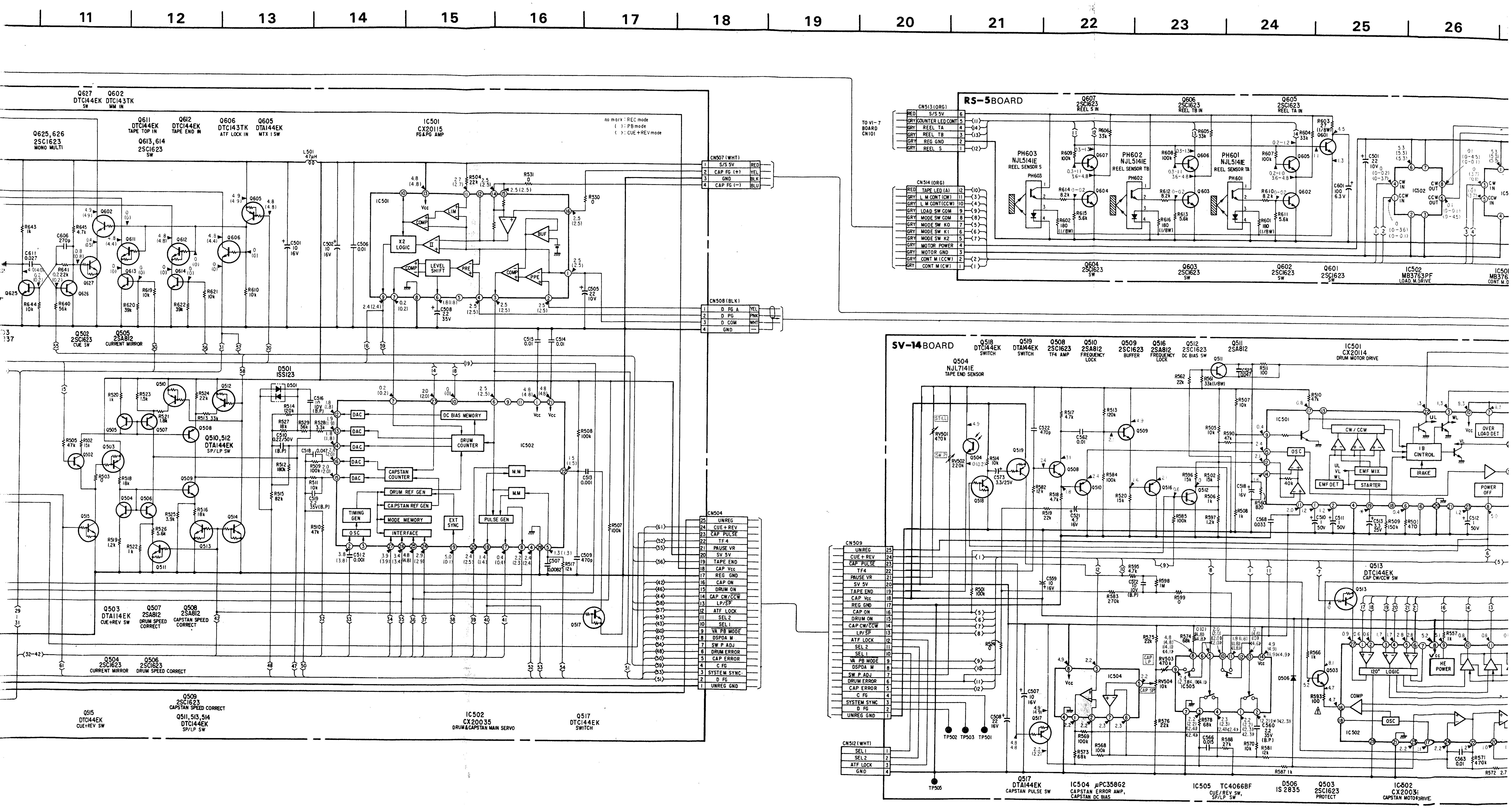
- ——— : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box colour bars.
  - (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

When indicating parts by reference number, please include the board name.

# ANISM CONTROL

**LOADING SWITCH), LD-1 (TAPE SENSOR LED), RS-5 (LOADING MOTOR/CONTROL MOTOR DRIVE)** SCHEMATIC DIAGRAM



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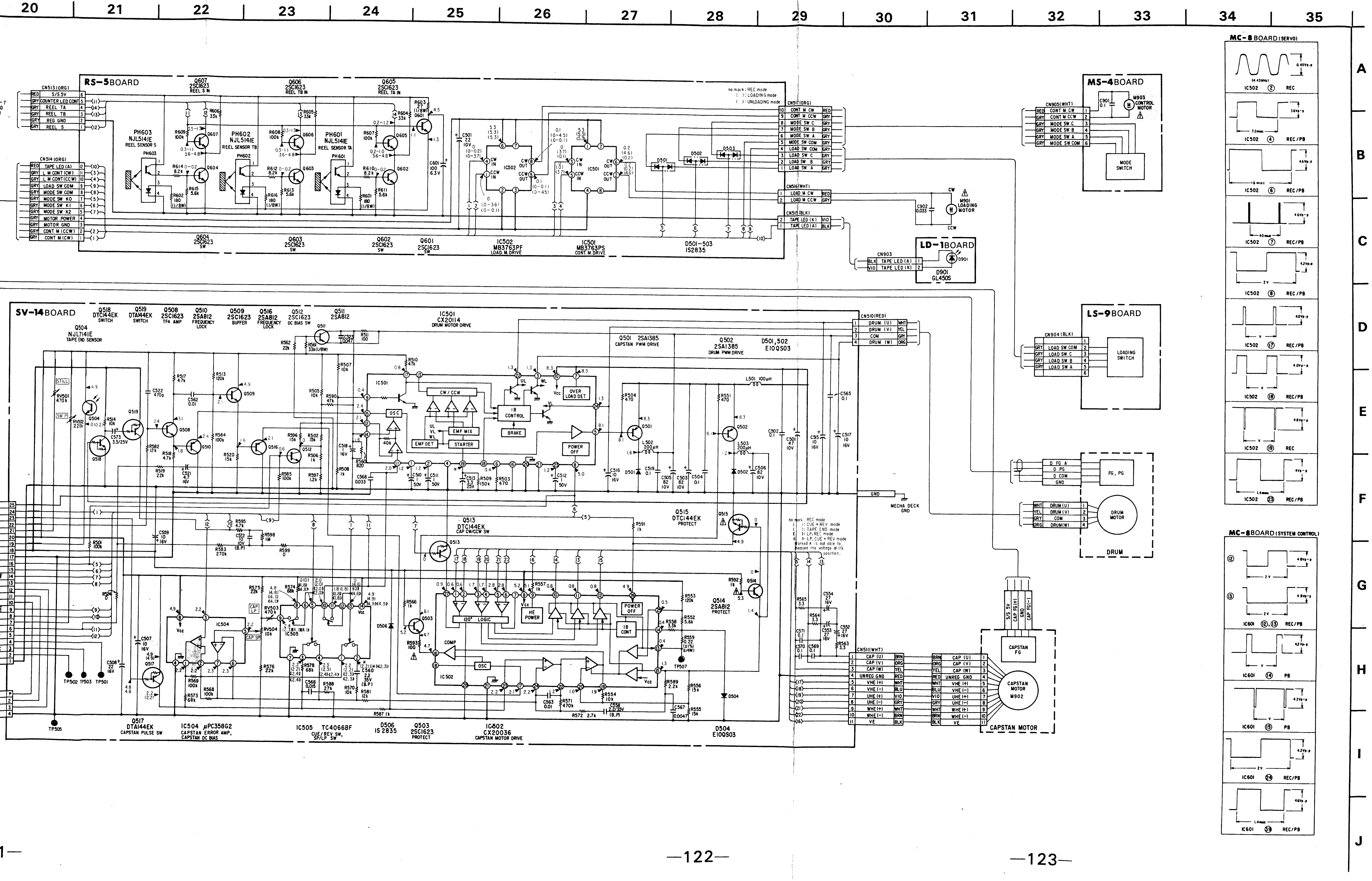
Q627 DTC144EK MONO SW
Q602 DTC143TK MM IN
Q625,626 2SC1623 MONO M/LTI
Q611 DTC144EK TAPE TOP IN
Q612 DTC144EK TAPE END IN
Q613,614 2SC1623 SW
Q606 DTC143TK ATF LOCK IN
Q605 DTA144EK MTX 1 SW
IC501 CX20115 FG&PG AMP
no mark : REC mode
( ) : PB mode
( ) : CUE+REV mode
CN507 (WHT)
S/S 5V
CAP FG (+)
GND
CAP FG (−)
CN508 (BLK)
D FG A
D PG
D COM
GND
Q502 2SC1623 CUE SW
Q505 2SA812 CURRENT MIRROR
D501 1SS123
Q510,512 DTA144EK SP/LP SW
DC BIAS MEMORY
DRUM COUNTER
CAPSTAN COUNTER
DRUM REF GEN
CAPSTAN REF GEN
MODE MEMORY
INTERFACE
TIMING GEN
OSC
EXT SYNC
PULSE GEN
M.M
IC502
Q503 DTA114EK CUE+REV SW
Q507 2SA812 DRUM SPEED CORRECT
Q508 2SA812 CAPSTAN SPEED CORRECT
Q504 2SC1623 CURRENT MIRROR
Q506 2SC1623 DRUM SPEED CORRECT
Q509 2SC1623 CAPSTAN SPEED CORRECT
Q511,513,514 DTC144EK SP/LP SW
Q515 DTC144EK CUE+REV SW
IC502 CX20035 DRUM&CAPSTAN MAIN SERVO
Q517 DTC144EK SWITCH
CN504
UNREG
CUE+REV
CAP PULSE
TF4
PAUSE VR
SV 5V
TAPE END
CAP Vcc
REG GND
CAP ON
DRUM ON
CAP CW/CCW
LP/SP
ATF LOCK
SEL 2
SEL 1
VA PB MODE
DSPDA M
SW P ADJ
DRUM ERROR
CAP ERROR
C FG
SYSTEM SYNC
D FG
UNREG GND
RS−5 BOARD
TO VI-7 BOARD CN101
CN513 (ORG)
S/S 5V
COUNTER LED CONT
REEL TA
REEL TB
REG GND
REEL S
CN514 (ORG)
TAPE LED (A)
L M CONT (CW)
L M CONT (CCW)
LOAD SW COM
MODE SW COM
MODE SW KO
MODE SW K1
MODE SW K2
MOTOR POWER
MOTOR GND
CONT M (CCW)
CONT M (CW)
Q607 2SC1623 REEL S IN
Q606 2SC1623 REEL TB IN
Q605 2SC1623 REEL TA IN
PH603 NJL5141E REEL SENSOR S
PH602 NJL5141E REEL SENSOR TB
PH601 NJL5141E REEL SENSOR TA
Q604 2SC1623 SW
Q603 2SC1623 SW
Q602 2SC1623 SW
Q601 2SC1623 SW
IC502 MB3763PF LOAD. M DRIVE
IC501 MB376 CONT. M D
SV−14 BOARD
Q518 DTC144EK SWITCH
Q519 DTA144EK SWITCH
Q508 2SC1623 TF4 AMP
Q510 2SA812 FREQUENCY LOCK
Q509 2SC1623 BUFFER
Q516 2SA812 FREQUENCY LOCK
Q512 2SC1623 DC BIAS SW
Q511 2SA812
IC501 CX20114 DRUM MOTOR DRIVE
Q504 NJL7141E TAPE END SENSOR
CW/CCW
IB CONTROL
BRAKE
OVER LOAD DET
POWER OFF
EMF MIX
EMF DET
STARTER
Q513 DTC144EK CAP CW/CCW SW
CN509
CN512 (WHT)
SEL 1
SEL 2
ATF LOCK
GND
TP502
TP503
TP501
TP505
120° LOGIC
HE POWER
COMP
OSC
IC504
IC505
IC502
Q517 DTA144EK CAPSTAN PULSE SW
IC504 μPC35862 CAPSTAN ERROR AMP, CAPSTAN DC BIAS
IC505 TC4066BF CUE/REV SW, SP/LP SW
D506 1S2835
Q503 2SC1623 PROTECT
IC502 CX20031 CAPSTAN MOTOR DRIVE

**nts identified by shading and mark**
**l for safety. Replace only with**
**specified.**

When indicating parts by reference number, please include the board name.

# SERVO/MECHANISM CONTROL



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35
A
B
C
D
E
F
G
H
I
J
RS-5 BOARD
CN513 (ORG)
CN514 (ORG)
Q607 2SC1623 REEL S IN
Q606 2SC1623 REEL TB IN
Q605 2SC1623 REEL TA IN
PH603 NJL5141E REEL SENSOR S
PH602 NJL5141E REEL SENSOR TB
PH601 NJL5141E REEL SENSOR TA
Q604 2SC1623 SW
Q603 2SC1623 SW
Q602 2SC1623 SW
Q601 2SC1623 SW
IC502 MB3763PF LOAD. M. DRIVE
IC501 MB3763PS CONT. M. DRIVE
D501-503 1S2835
no mark : REC mode
( ) : LOADING mode
( ) : UNLOADING mode
CN517 (ORG)
CN516 (WHT)
CN515 (BLK)
MS-4 BOARD
CN905 (WHT)
M903 CONTROL MOTOR
MODE SWITCH
M901 LOADING MOTOR
CW
CCW
LD-1 BOARD
CN903
D901 GL450S
LS-9 BOARD
CN904 (BLK)
LOADING SWITCH
SV-14 BOARD
Q518 DTC144EK SWITCH
Q519 DTA144EK SWITCH
Q508 2SC1623 TF4 AMP
Q510 2SA812 FREQUENCY LOCK
Q509 2SC1623 BUFFER
Q516 2SA812 FREQUENCY LOCK
Q512 2SC1623 DC BIAS SW
Q511 2SA812
Q504 NJL7141E TAPE END SENSOR
IC501 CX20114 DRUM MOTOR DRIVE
Q501 2SA1385 CAPSTAN PWM DRIVE
Q502 2SA1385 DRUM PWM DRIVE
D501,502 E10QS03
CN510 (RED)
STILL
SW P
CW/CCW
OSC
EMF MIX
EMF DET
STARTER
IB CONTROL
BRAKE
OVER LOAD DET
POWER OFF
L501 100μH
L502 200μH
L503 200μH
D FG A
D PG
D COM
GND
FG, PG
DRUM MOTOR
DRUM
MECHA DECK GND
Q513 DTC144EK CAP CW/CCW SW
Q515 DTC144EK PROTECT
Q514 2SA812 PROTECT
120° LOGIC
HE POWER
IB CONT
COMP
CAP LP
CAP SP
IC504
IC505
IC502
TP502
TP503
TP501
TP505
TP507
CN511 (WHT)
CAP (U)
CAP (V)
CAP (W)
UNREG GND
VHE (+)
VHE (−)
UHE (+)
UHE (−)
WHE (+)
WHE (−)
VE
CAPSTAN FG
CAPSTAN MOTOR M902
CAPSTAN MOTOR
Q517 DTA144EK CAPSTAN PULSE SW
IC504 μPC358G2 CAPSTAN ERROR AMP, CAPSTAN DC BIAS
IC505 TC4066BF CUE/REV SW, SP/LP SW
D506 1S2835
Q503 2SC1623 PROTECT
IC502 CX20036 CAPSTAN MOTOR DRIVE
D504 E10QS03
MC-8 BOARD (SERVO)
IC502 ② REC
IC502 ④ REC/PB
IC502 ⑥ REC/PB
IC502 ⑦ REC/PB
IC502 ⑧ REC/PB
IC502 ⑰ REC/PB
IC502 ⑱ REC/PB
IC502 ⑲ REC
IC502 ㉓ REC/PB
MC-8 BOARD (SYSTEM CONTROL)
IC601 ⑫, ⑬ REC/PB
IC601 ⑭ PB
IC601 ⑮ PB
IC601 ㉔ REC/PB
IC601 ㊴ REC/PB

# MODE CONTROL

## SK-8 (MODE CONTROL), DS-8 (POWER SUPPLY C

– Ref. No. DS-8 BOARD : 1000 series, SK-8 BOARD : 5000 ser

1 2 3 4

A
B
C
D
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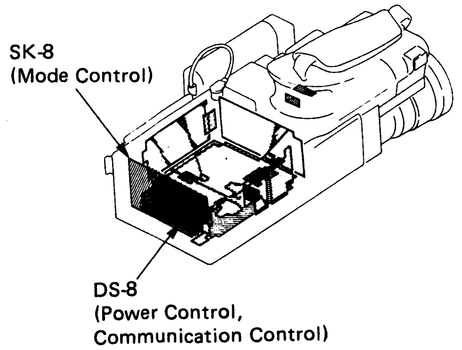
F
G
H
I
J


SK-8
(Mode Control)
DS-8
(Power Control,
Communication Control)

Q,IC
601
602
608,609
603
612
IC604
611,IC60
610,IC6
06
IC602
605
604
Q,IC

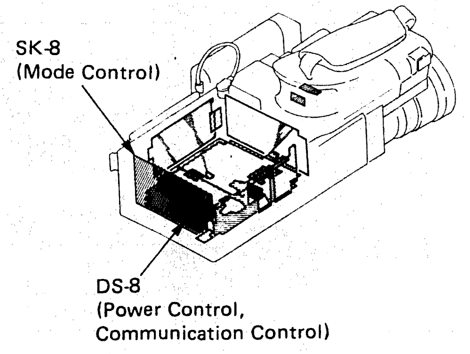
**Note:**

- ⊗ : Through hole.
- ▨ : pattern from the side which enables seeing.
- ░ : B+ pattern from the side which enables seeing.
- ▒ : pattern of the rear side.

## SK-8 (MODE CONTROL), DS-8 (POWER SUPPLY CONTROL, COMMUNICATION CONTROL CPU) PRINTED WIRING BOARDS

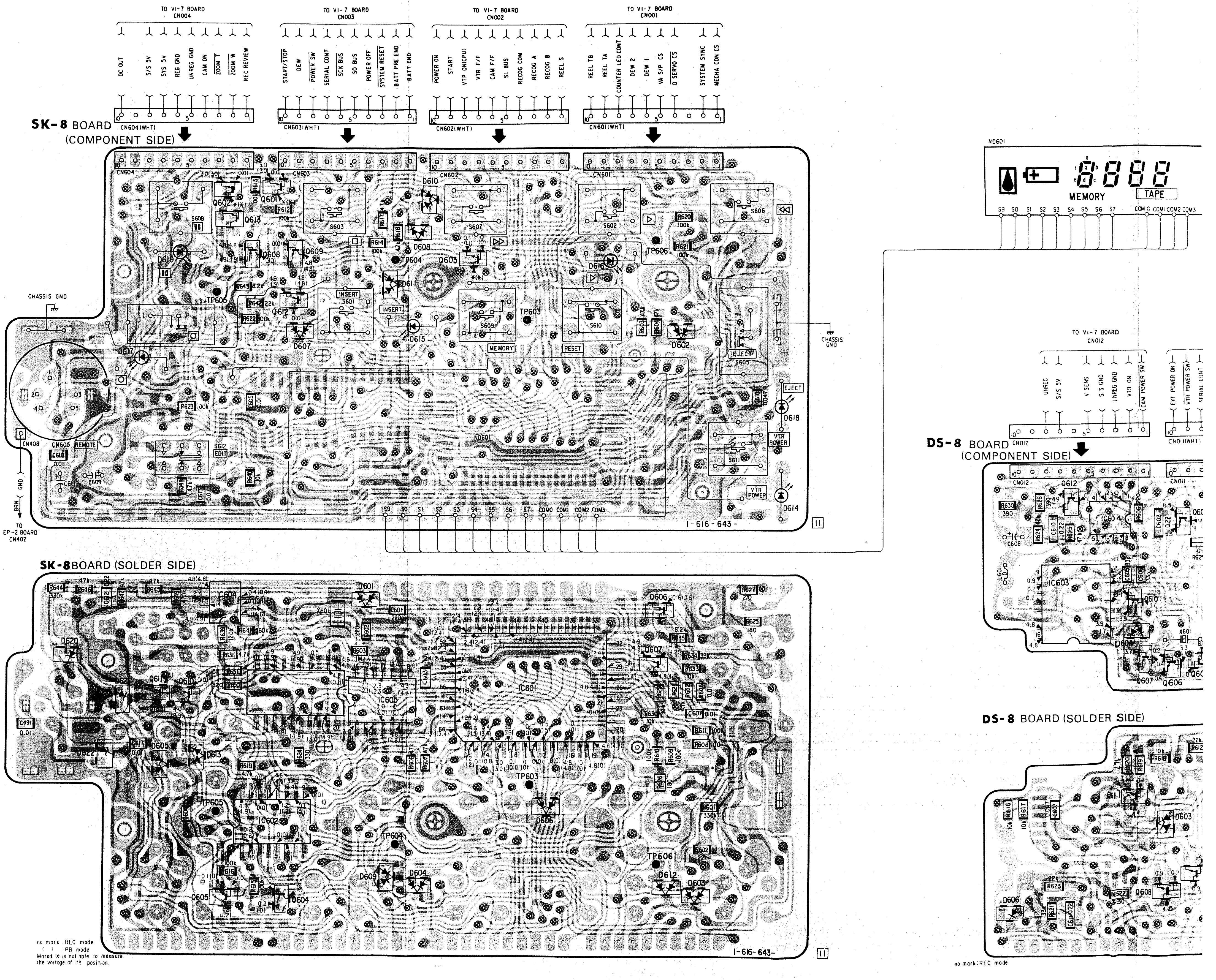
– Ref. No. DS-8 BOARD : 1000 series, SK-8 BOARD : 5000 series –

| Q, IC | D | TP |
|---|---|---|
| 601 | | |
| 602 | | |
| | 610 | |
| | 608 | 606 |
| | | 604 |
| 608,609 | 619 | |
| 603 | 616 | |
| | | 605 |
| | 611 | |
| 612 | | |
| | | 603 |
| | 615 | |
| | 607 602 | |
| | 617 | |
| | 618 | |
| | 614 | |
| 606<br>IC604 | 601 | |
| | 620 | |
| 607 | | |
| IC601 | | |
| 611,IC603 | 621 | |
| 610,IC605 | | |
| | 622 613 | |
| | 605 | |
| Q614 | | |
| | 606 | 603 |
| | | 605 |
| IC602 | | |
| | | 604 |
| | | 606 |
| | 609 | |
| | 604,612 | |
| 605 | 603 | |
| 604 | | |
| Q,IC | D | TP |


SK-8
(Mode Control)
DS-8
(Power Control,
Communication Control)

**Note:**

- ⊗ : Through hole.
- ▨ : pattern from the side which enables seeing.
- ▨ : B+ pattern from the side which enables seeing.
- ▨ : pattern of the rear side.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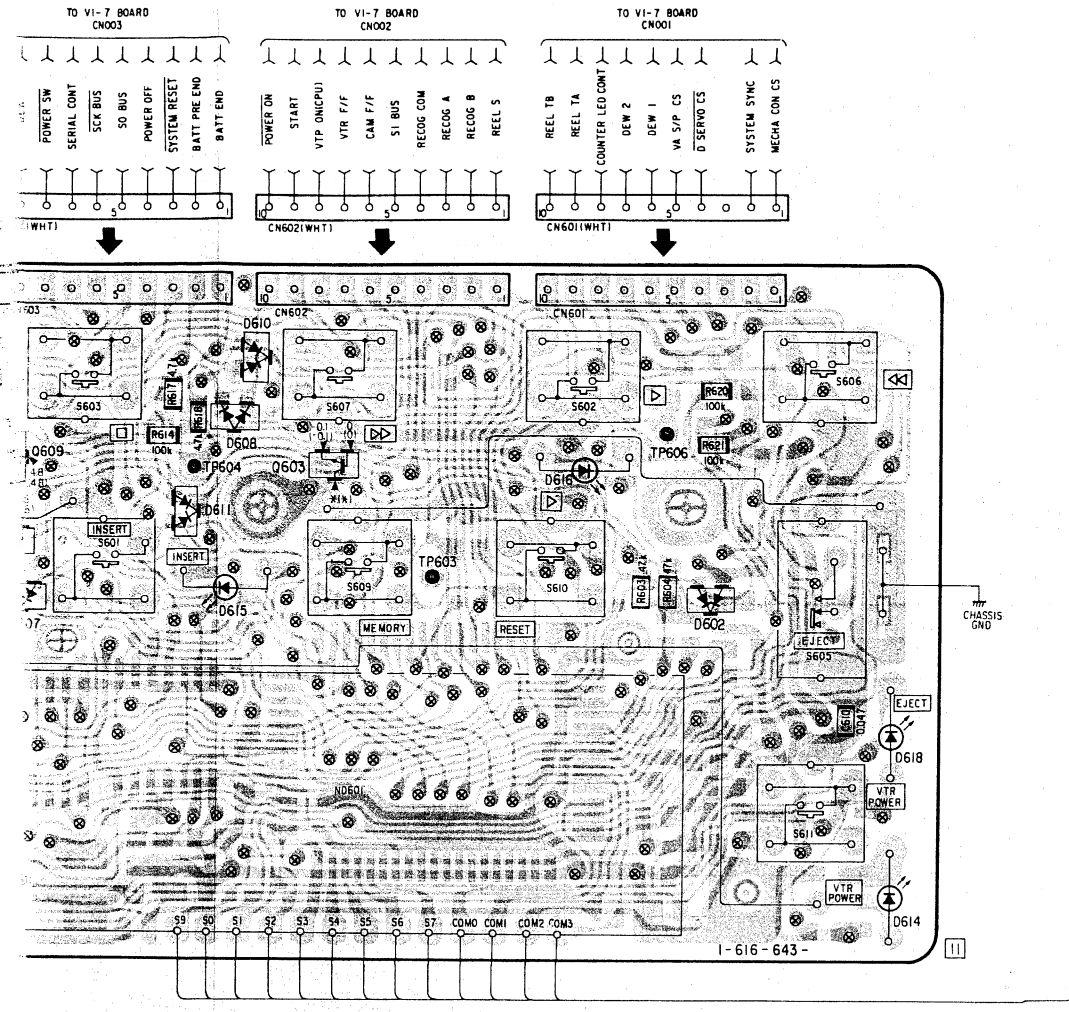
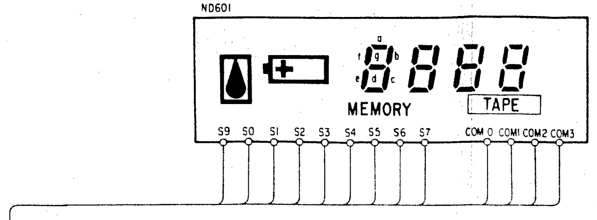
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
TO VI-7 BOARD CN004
DC OUT
S/S 5V
SYS 5V
REG GND
UNREG GND
CAM ON
ZOOM T
ZOOM W
REC REVIEW
CN604(WHT)
TO VI-7 BOARD CN003
START/STOP
DEW
POWER SW
SERIAL CONT
SCK BUS
SO BUS
POWER OFF
SYSTEM RESET
BATT PRE END
BATT END
CN603(WHT)
TO VI-7 BOARD CN002
POWER ON
START
VTP ON(CPU)
VTR F/F
CAM F/F
SI BUS
RECOG COM
RECOG A
RECOG B
REEL S
CN602(WHT)
TO VI-7 BOARD CN001
REEL TB
REEL TA
COUNTER LED CONT
DEW 2
DEW 1
VA S/P CS
D SERVO CS
SYSTEM SYNC
MECHA CON CS
CN601(WHT)
SK-8 BOARD
(COMPONENT SIDE)
CHASSIS GND
TO EP-2 BOARD CN402
GND
BRN
CN408
CN605
REMOTE
EDIT
INSERT
MEMORY
RESET
EJECT
VTR POWER
ND601
MEMORY
TAPE
S9 S0 S1 S2 S3 S4 S5 S6 S7 COM0 COM1 COM2 COM3
1-616-643-
SK-8 BOARD (SOLDER SIDE)
IC601
IC602
IC603
IC604
IC605
TP603
TP604
TP605
TP606
1-616-643-
TO VI-7 BOARD CN012
UNREG
S/S 5V
V SENS
S.S GND
UNREG GND
VTR ON
CAM POWER SW
CN012
EXT POWER ON
VTR POWER SW
SERIAL CONT
CN011(WHT)
DS-8 BOARD
(COMPONENT SIDE)
DS-8 BOARD (SOLDER SIDE)
no mark : REC mode

no mark : REC mode
( ) : PB mode
Markd ★ is not able to measure the voltage of it's position.

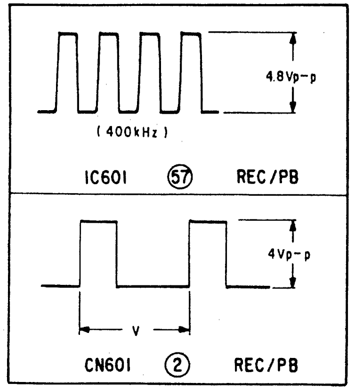
D WIRING BOARDS

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

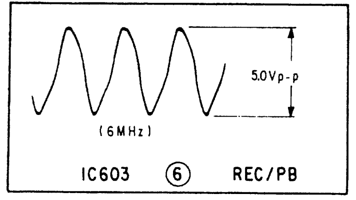

TO VI-7 BOARD CN003
POWER SW
SERIAL CONT
SCK BUS
SO BUS
POWER OFF
SYSTEM RESET
BATT PRE END
BATT END
(WHT)
TO VI-7 BOARD CN002
POWER ON
START
VTP ON(CPU)
VTR F/F
CAM F/F
SI BUS
RECOG COM
RECOG A
RECOG B
REEL S
CN602(WHT)
TO VI-7 BOARD CN001
REEL TB
REEL TA
COUNTER LED CONT
DEW 2
DEW 1
VA S/P CS
D SERVO CS
SYSTEM SYNC
MECHA CON CS
CN601(WHT)
CN602
CN601
D610
S603
S607
S602
S606
R617
R618
R614 100k
D608
Q609
TP604
Q603
D616
R620 100k
R621 100k
TP606
D611
INSERT
S601
INSERT
S609
TP603
S610
R603 47k
R604 47k
D602
D615
MEMORY
RESET
EJECT
S605
EJECT
D618
CHASSIS GND
ND601
VTR POWER
S611
VTR POWER
D614
S9 S0 S1 S2 S3 S4 S5 S6 S7 COM0 COM1 COM2 COM3
1-616-643-
11


ND601
8888
MEMORY
TAPE
S9 S0 S1 S2 S3 S4 S5 S6 S7 COM 0 COM1 COM2 COM3

**SK-8** BOARD (MODE CONTROL)



**DS-8** BOARD



A
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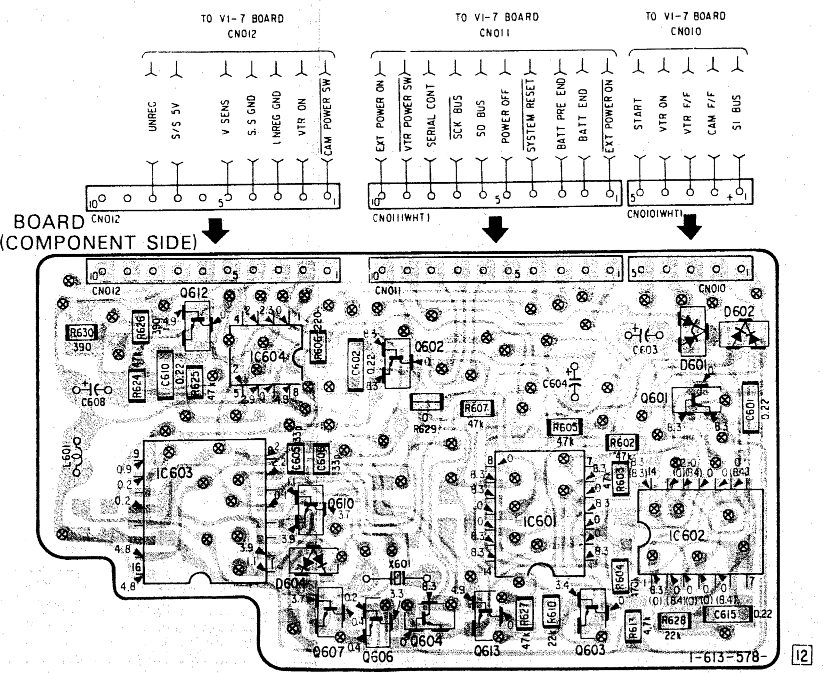
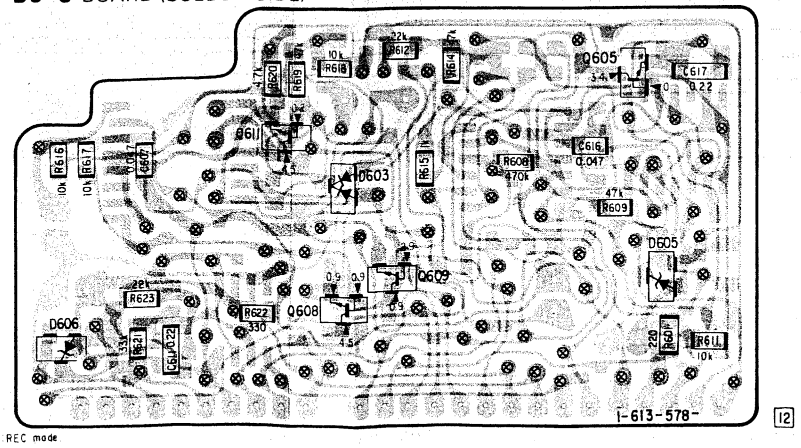
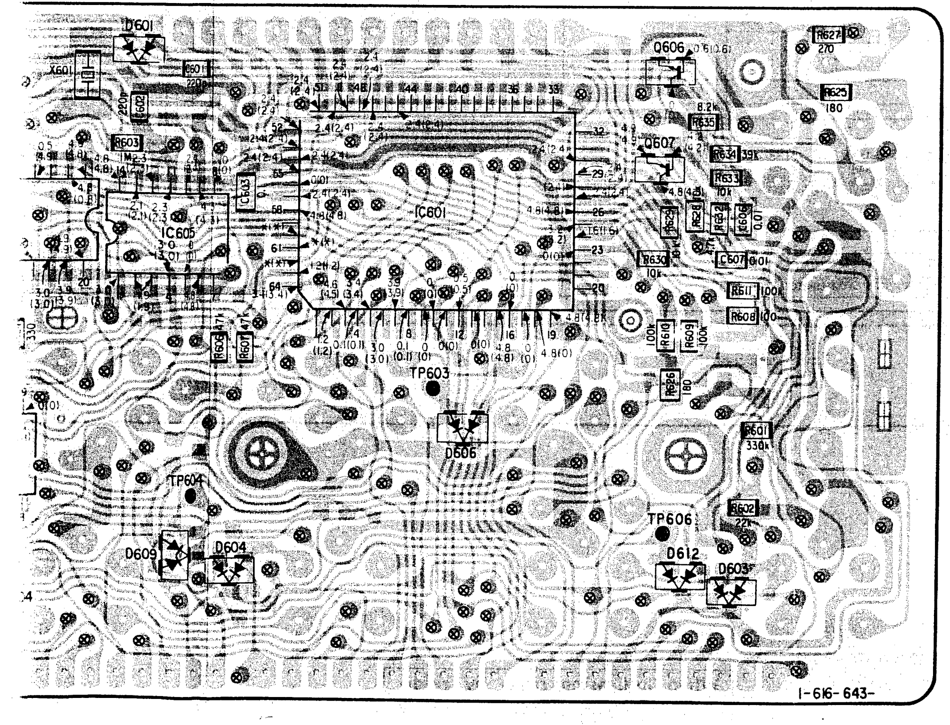
**DS-8** BOARD (COMPONENT SIDE)


TO VI-7 BOARD CN012
UNREC
S/S 5V
V SENS
S.S GND
UNREG GND
VTR ON
CAM POWER SW
CN012
TO VI-7 BOARD CN011
EXT POWER ON
VTR POWER SW
SERIAL CONT
SCK BUS
SO BUS
POWER OFF
SYSTEM RESET
BATT PRE END
BATT END
EXT POWER ON
CN011(WHT)
TO VI-7 BOARD CN010
START
VTR ON
VTR F/F
CAM F/F
SI BUS
CN010(WHT)
Q612
R630 390
R626
IC604
Q602
D602
D601
Q601
C608
IC603
Q610
R607 47k
R605 47k
R602
IC601
IC602
X601
Q604
Q607
Q606
Q613
Q603
R628 22k
C615 0.22
1-613-578-
12

**DS-8** BOARD (SOLDER SIDE)


R620
R618
R612
R614
Q605
C617 0.22
R616 10k
R617 10k
R607
Q611
Q603
R615
R608 470k
C616 0.047
R609
D605
R623
D606
R621
R622 330
Q608
Q609
R610 10k
1-613-578-
12

no mark: REC mode


D601
X601
R601
R602
R603
IC605
IC601
Q606
R627 270
R625 180
Q607
TP603
D606
TP604
D609
D604
R601 330k
R622
TP606
D612
D603
1-616-643-
11

| Q, IC | D |
|---|---|
| 612 | 601,602 |
| IC604,602 | |
| 601 | |
| IC603 | |
| 610, IC601 | |
| IC602 | |
| | 604 |
| 607,604,613,603<br>606 | |
| 605 | |
| 611 | |
| | 603 |
| 609 | 605 |
| 608 | |
| | 606 |
| Q, IC | D |

**Caution:**

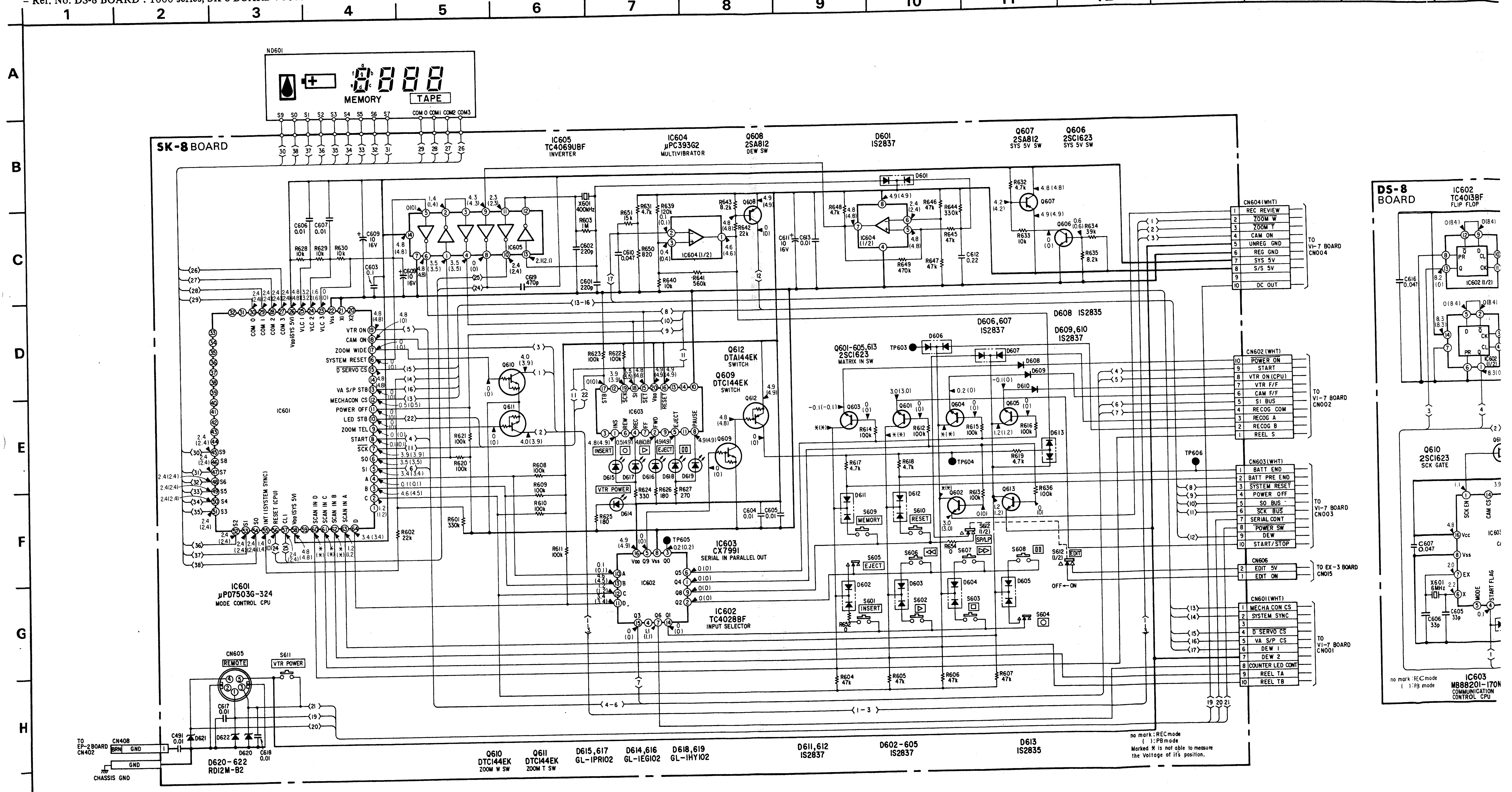
Pattern face side: (Solder Side) — Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) — Parts on the parts face side seen from the part face are indicated.

When indicating parts by reference number, please include the board name.

## SK-8 (MODE CONTROL), DS-8 (POWER SUPPLY CONTROL, COMMUNICATION CONTROL CPU) SCHEMATIC DIAGRAM

– Ref. No. DS-8 BOARD : 1000 series, SK-8 BOARD : 5000 series –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A
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C
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G
H
ND601
MEMORY
TAPE
SK-8 BOARD
IC605 TC4069UBF INVERTER
IC604 μPC393G2 MULTIVIBRATOR
Q608 2SA812 DEW SW
D601 1S2837
Q607 2SA812 SYS 5V SW
Q606 2SC1623 SYS 5V SW
DS-8 BOARD
IC602 TC4013BF FLIP FLOP
CN604(WHT)
REC REVIEW
ZOOM W
ZOOM T
CAM ON
UNREG GND
REG GND
SYS 5V
S/S 5V
DC OUT
TO VI-7 BOARD CN004
IC601
Q610
Q611
Q612 DTA144EK SWITCH
Q609 DTC144EK SWITCH
IC603
Q601-605,613 2SC1623 MATRIX IN SW
D606,607 1S2837
D608 1S2835
D609,610 1S2837
CN602(WHT)
POWER ON
START
VTR ON(CPU)
VTR F/F
CAM F/F
SI BUS
RECOG COM
RECOG A
RECOG B
REEL S
TO VI-7 BOARD CN002
CN603(WHT)
BATT END
BATT PRE END
SYSTEM RESET
POWER OFF
SO BUS
SCK BUS
SERIAL CONT
POWER SW
DEW
START/STOP
TO VI-7 BOARD CN003
CN606
EDIT 5V
EDIT ON
TO EX-3 BOARD CN015
CN601(WHT)
MECHA CON CS
SYSTEM SYNC
D SERVO CS
VA S/P CS
DEW 1
DEW 2
COUNTER LED CONT
REEL TA
REEL TB
TO VI-7 BOARD CN001
Q610 2SC1623 SCK GATE
IC603 MB88201-170N COMMUNICATION CONTROL CPU
IC603 CX7991 SERIAL IN PARALLEL OUT
IC602 TC4028BF INPUT SELECTOR
IC601 μPD7503G-324 MODE CONTROL CPU
S601 INSERT
S602
S603
S604
S605 EJECT
S606
S607
S608
S609 MEMORY
S610 RESET
S611 VTR POWER
S612 EDIT
SP/LP
CN605 REMOTE
TO EP-2 BOARD CN402
CN408
CHASSIS GND
D620-622 RD12M-B2
Q610 DTC144EK ZOOM W SW
Q611 DTC144EK ZOOM T SW
D615,617 GL-1PR102
D614,616 GL-1EG102
D618,619 GL-1HY102
D611,612 1S2837
D602-605 1S2837
D613 1S2835
no mark : REC mode
( ) : PB mode
Marked ✻ is not able to measure the Voltage of it's position.

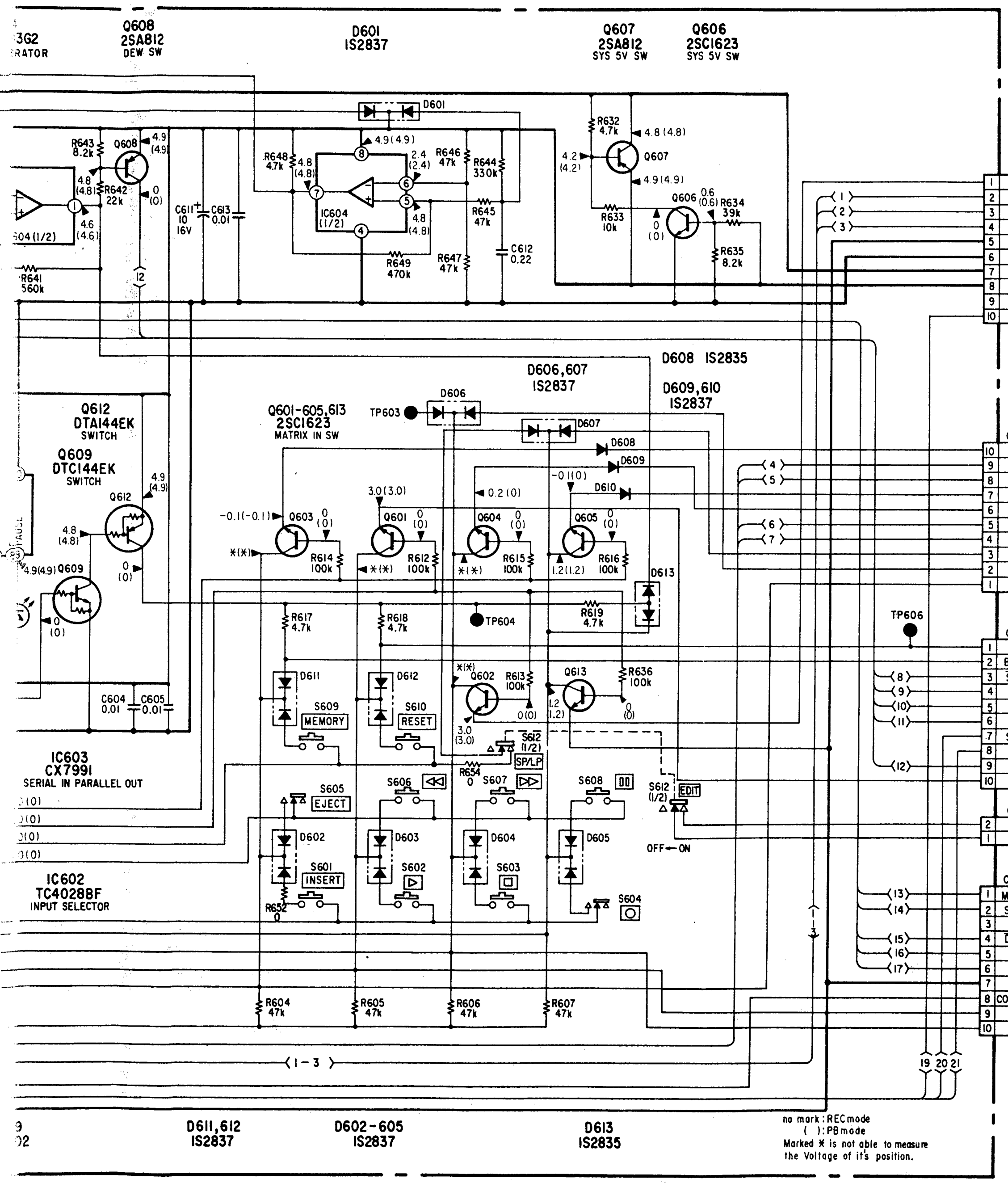
**Note:**

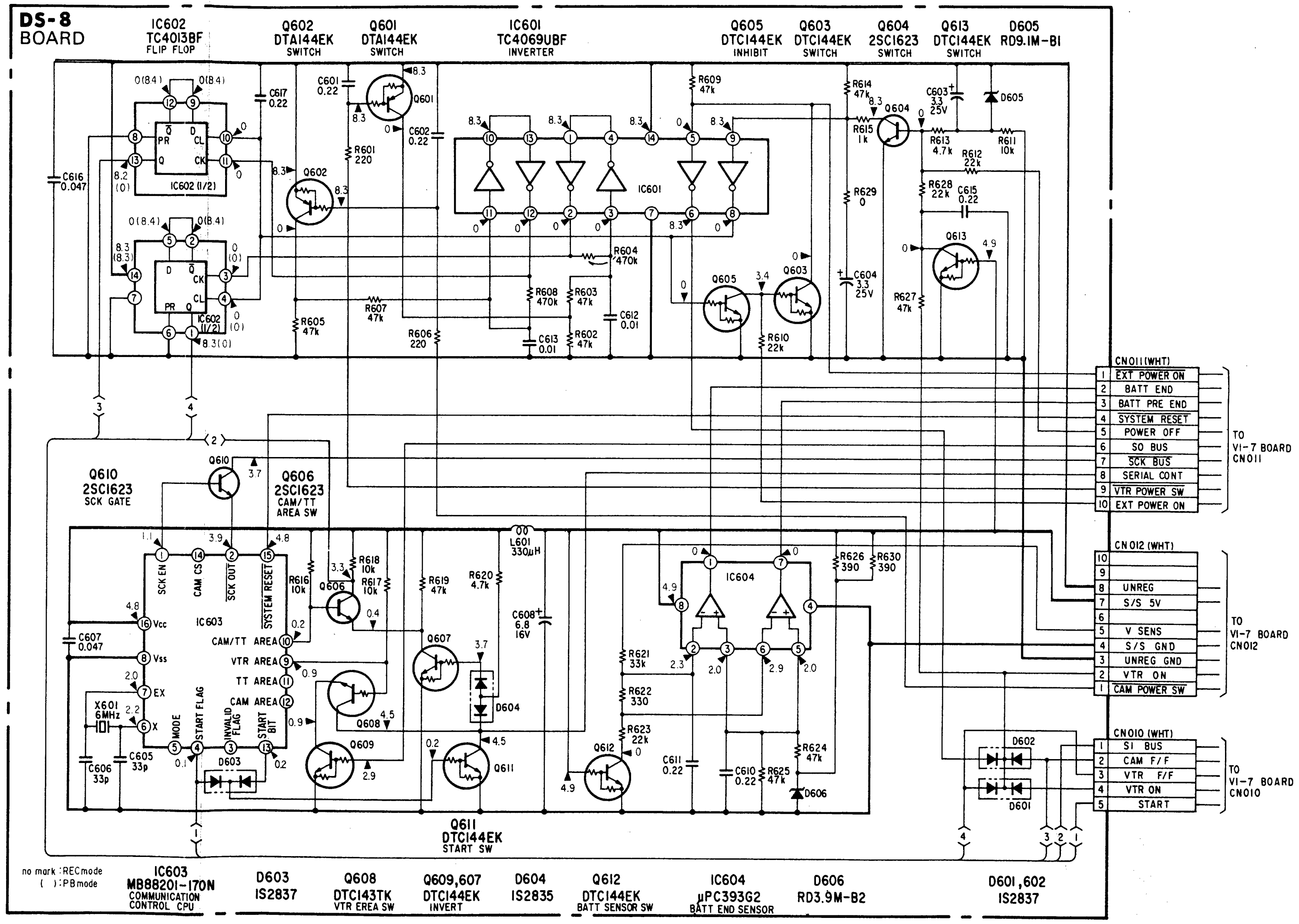
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.

- ―― : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box colour bars.
  - (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

When indicating parts by reference number, please include the board name.


Q608 2SA812 DEW SW
D601 IS2837
Q607 2SA812 SYS 5V SW
Q606 2SC1623 SYS 5V SW
IC604 (1/2)
CN604 (WHT)
1 REC REVIEW
2 ZOOM W
3 ZOOM T
4 CAM ON
5 UNREG GND
6 REG GND
7 SYS 5V
8 S/S 5V
9
10 DC OUT
TO VI-7 BOARD CN004
Q612 DTA144EK SWITCH
Q609 DTC144EK SWITCH
Q601-605,613 2SC1623 MATRIX IN SW
D606,607 IS2837
D608 IS2835
D609,610 IS2837
TP603
TP604
TP606
CN602 (WHT)
10 POWER ON
9 START
8 VTR ON (CPU)
7 VTR F/F
6 CAM F/F
5 SI BUS
4 RECOG COM
3 RECOG A
2 RECOG B
1 REEL S
TO VI-7 BOARD CN002
CN603 (WHT)
1 BATT END
2 BATT PRE END
3 SYSTEM RESET
4 POWER OFF
5 SO BUS
6 SCK BUS
7 SERIAL CONT
8 POWER SW
9 DEW
10 START/STOP
TO VI-7 BOARD CN003
CN606
2 EDIT 5V
1 EDIT ON
TO EX-3 BOARD CN015
CN601 (WHT)
1 MECHA CON CS
2 SYSTEM SYNC
3
4 D SERVO CS
5 VA S/P CS
6 DEW 1
7 DEW 2
8 COUNTER LED CONT
9 REEL TA
10 REEL TB
TO VI-7 BOARD CN001
IC603 CX7991 SERIAL IN PARALLEL OUT
IC602 TC4028BF INPUT SELECTOR
S609 MEMORY
S610 RESET
S612 (1/2) SP/LP
S605 EJECT
S606
S607
S608
S612 (1/2) EDIT
OFF — ON
S601 INSERT
S602
S603
S604
D611,612 IS2837
D602-605 IS2837
D613 IS2835
no mark : RECmode
( ) : PBmode
Marked ※ is not able to measure the Voltage of it's position.


DS-8 BOARD
IC602 TC4013BF FLIP FLOP
Q602 DTA144EK SWITCH
Q601 DTA144EK SWITCH
IC601 TC4069UBF INVERTER
Q605 DTC144EK INHIBIT
Q603 DTC144EK SWITCH
Q604 2SC1623 SWITCH
Q613 DTC144EK SWITCH
D605 RD9.1M-B1
Q610 2SC1623 SCK GATE
Q606 2SC1623 CAM/TT AREA SW
IC603
IC604
CN011 (WHT)
1 EXT POWER ON
2 BATT END
3 BATT PRE END
4 SYSTEM RESET
5 POWER OFF
6 SO BUS
7 SCK BUS
8 SERIAL CONT
9 VTR POWER SW
10 EXT POWER ON
TO VI-7 BOARD CN011
CN012 (WHT)
10
9
8 UNREG
7 S/S 5V
6
5 V SENS
4 S/S GND
3 UNREG GND
2 VTR ON
1 CAM POWER SW
TO VI-7 BOARD CN012
CN010 (WHT)
1 SI BUS
2 CAM F/F
3 VTR F/F
4 VTR ON
5 START
TO VI-7 BOARD CN010
Q611 DTC144EK START SW
no mark : RECmode
( ) : PBmode
IC603 MB88201-170N COMMUNICATION CONTROL CPU
D603 IS2837
Q608 DTC143TK VTR EREA SW
Q609,607 DTC144EK INVERT
D604 IS2835
Q612 DTC144EK BATT SENSOR SW
IC604 μPC393G2 BATT END SENSOR
D606 RD3.9M-B2
D601,602 IS2837

ured with
mpedance

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

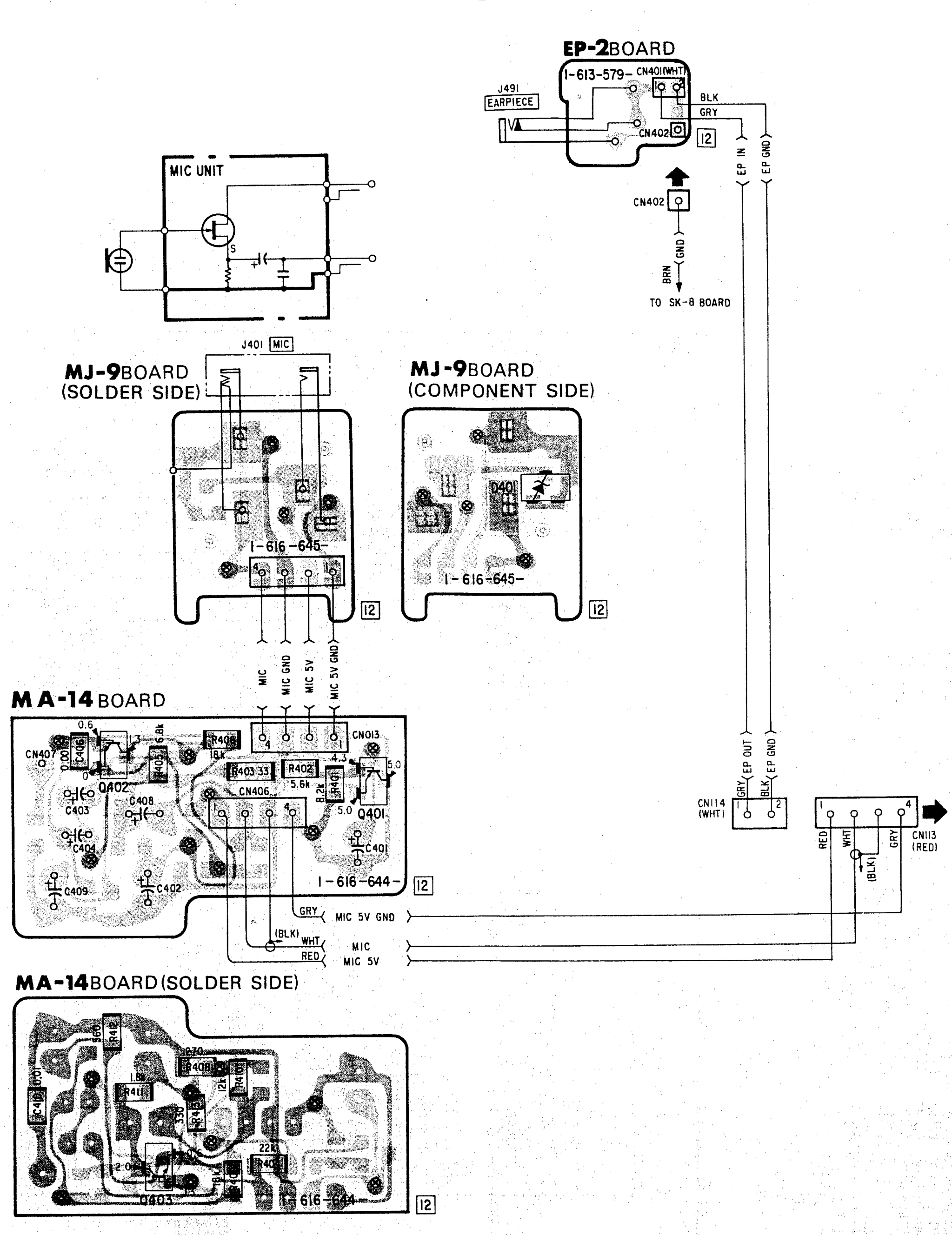
When indicating parts by reference number, please include the board name.

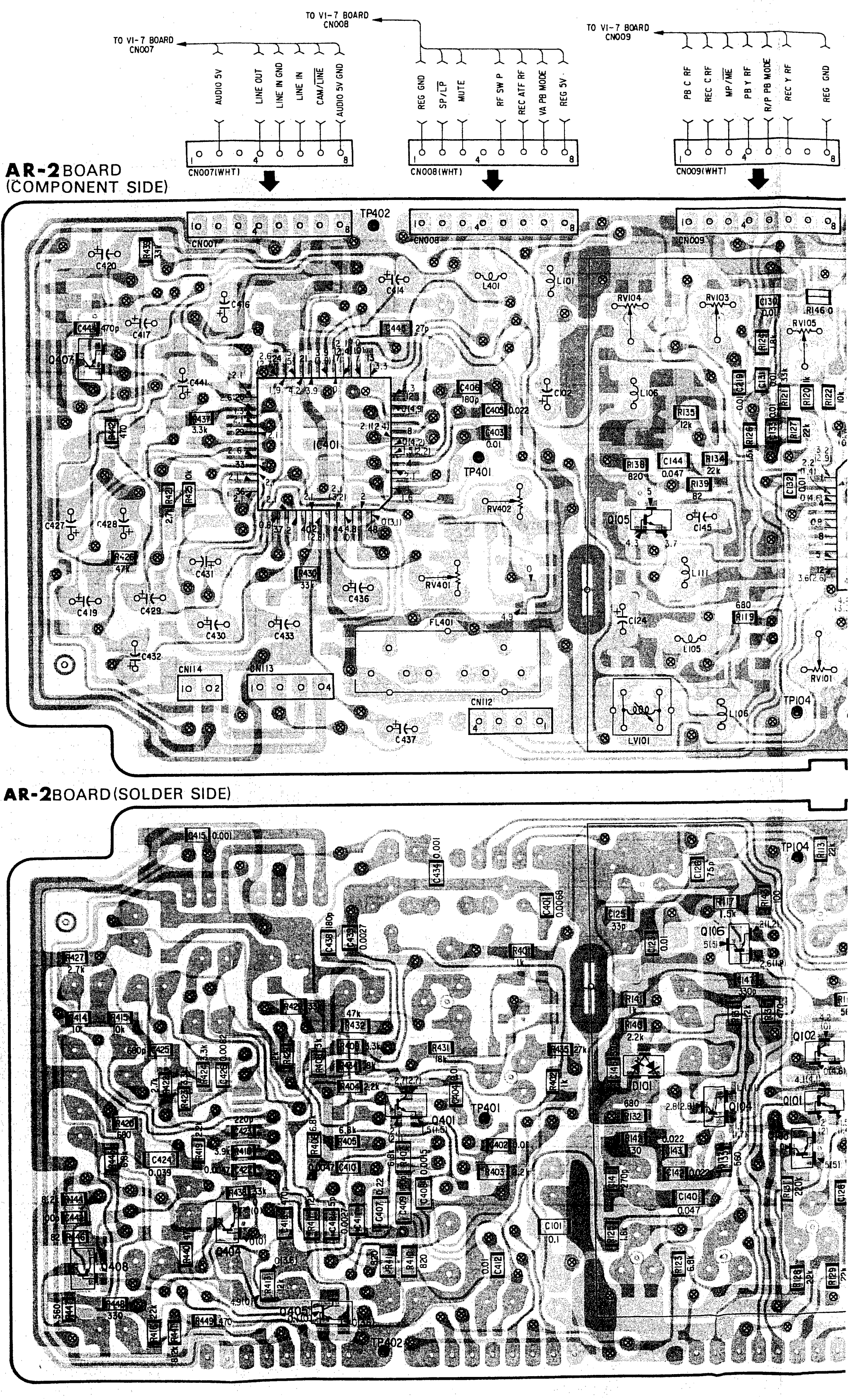
## MA-14 (MIC AMP), MJ-9 (MIC INPUT), AR-2 (AUDIO PROCESS, VIDEO HEAD AMP), EP-2 (EARPIECE OUTPUT) PRINTED WIRING BOARDS

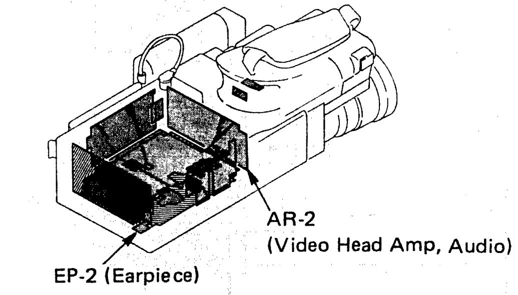
– Ref. No. AR-2, EP-2 BOARD : 5000 series, MA-14, MJ-8 BOARD : 7000 series –

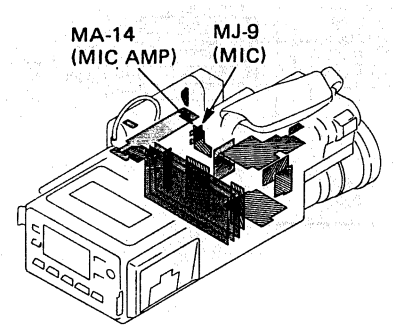
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A B C D E F G H I J


EP-2 BOARD
1-613-579-
CN401(WHT)
J491 EARPIECE
CN402
BLK
GRY
EP IN
EP GND
BRN
GND
TO SK-8 BOARD
MIC UNIT
J401 MIC
MJ-9 BOARD (SOLDER SIDE)
1-616-645-
MJ-9 BOARD (COMPONENT SIDE)
1-616-645-
Q401
MIC
MIC GND
MIC 5V
MIC 5V GND
MA-14 BOARD
CN407
CN403
CN406
Q401
Q402
C401
C402
C403
C404
C408
C409
R402
R403
R404
R405
1-616-644-
GRY MIC 5V GND
(BLK)
WHT MIC
RED MIC 5V
EP OUT
EP GND
CN114 (WHT)
CN113 (RED)
RED
WHT
(BLK)
GRY
MA-14 BOARD (SOLDER SIDE)
Q403
616-644-
12


TO VI-7 BOARD CN007
TO VI-7 BOARD CN008
TO VI-7 BOARD CN009
AUDIO 5V
LINE OUT
LINE IN GND
LINE IN
CAM/LINE
AUDIO 5V GND
REG GND
SP/LP
MUTE
RF SW P
REC ATF RF
VA PB MODE
REG 5V
PB C RF
REC C RF
MP/ME
PB Y RF
R/P PB MODE
REC Y RF
REG GND
CN007(WHT)
CN008(WHT)
CN009(WHT)
AR-2 BOARD (COMPONENT SIDE)
TP402
TP401
TP104
IC401
L401
L101
L105
L106
L111
LV101
FL401
RV101
RV103
RV104
RV105
RV401
RV402
Q105
Q107
CN112
CN113
CN114
AR-2 BOARD (SOLDER SIDE)
Q101
Q102
Q106
Q401
Q403
Q405
Q408
TP401
TP402
TP104


AR-2
(Video Head Amp, Audio)
EP-2 (Earpiece)


MA-14
(MIC AMP)
MJ-9
(MIC)

**Note:**

- ⊗ : Through hole.
- ▩ : pattern from the side which enables seeing.
- ▨ : B+ pattern from the side which enables seeing.
- ░ : pattern of the rear side.

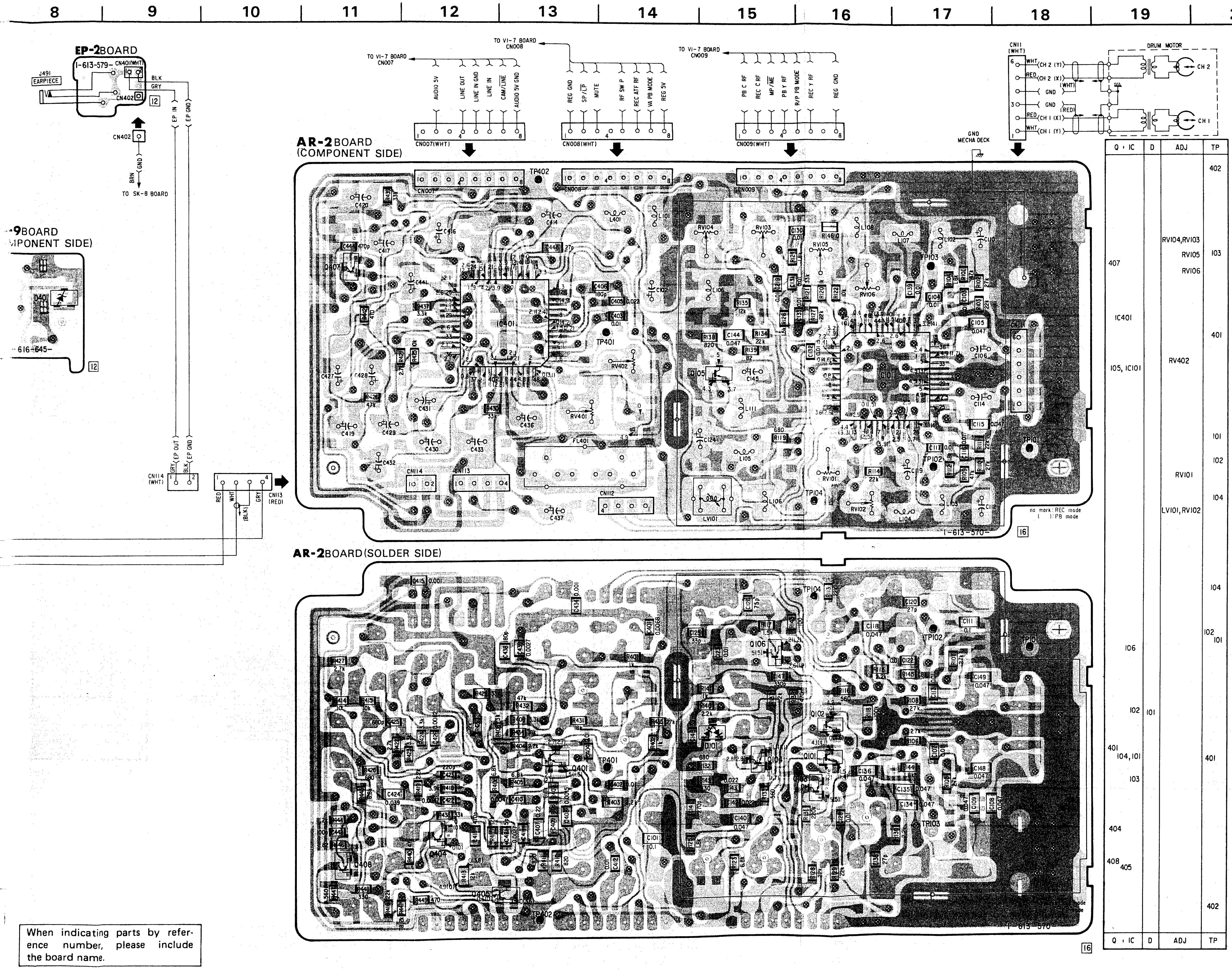
**Caution:**

| | |
|---|---|
| Pattern face side:<br>(Solder Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component Side) | Parts on the parts face side seen from the part face are indicated. |

When indicating parts by reference number, please include the board name.

# AUDIO AUDIO

OUTPUT) PRINTED WIRING BOARDS


8
9
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14
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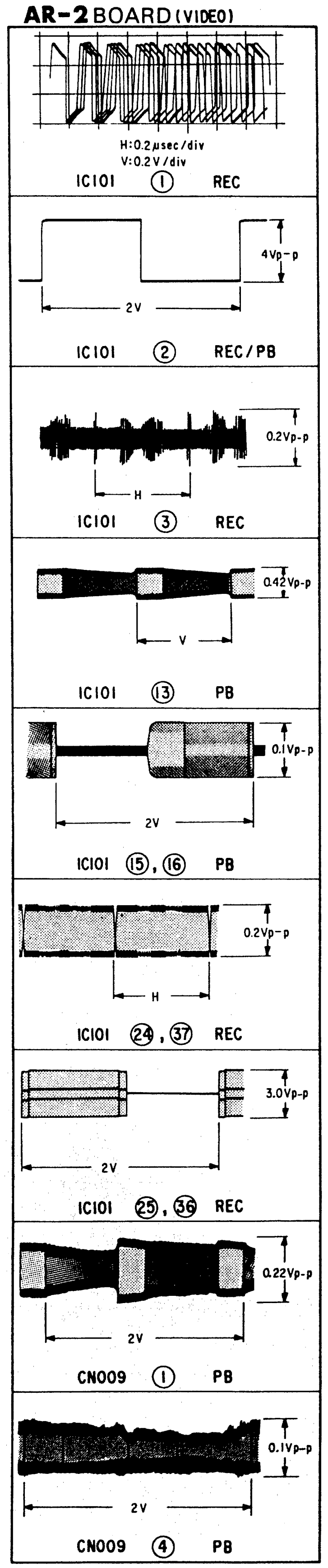
16
17
18
19
20
EP-2 BOARD
1-613-579-
CN401(WHT)
J491
EARPIECE
CN402
BLK
GRY
12
CN402
GND
BRN
TO SK-8 BOARD
EP IN
EP GND
-9 BOARD
(COMPONENT SIDE)
D401
616-645-
12
EP OUT
EP GND
GRY
BLK
CN114 (WHT)
RED
WHT
(BLK)
GRY
CN113 (RED)
TO VI-7 BOARD CN007
AUDIO 5V
LINE OUT
LINE IN GND
LINE IN
CAM/LINE
AUDIO 5V GND
CN007(WHT)
TO VI-7 BOARD CN008
REG GND
SP/LP
MUTE
RF SW P
REC ATF RF
VA PB MODE
REG 5V
CN008(WHT)
TO VI-7 BOARD CN009
PB C RF
REC C RF
MP/ME
PB Y RF
R/P PB MODE
REC Y RF
REG GND
CN009(WHT)
CN11 (WHT)
WHT
RED
CH 2 (Y)
CH 2 (X)
(WHT)
GND
GND
(RED)
CH 1 (X)
CH 1 (Y)
DRUM MOTOR
CH 2
CH 1
GND
MECHA DECK
AR-2 BOARD
(COMPONENT SIDE)
TP402
TP401
TP101
TP102
TP103
TP104
IC401
IC101
Q105
RV401
RV402
RV101
RV102
RV103
RV104
RV105
RV106
LV101
FL401
CN112
CN113
CN114
no mark: REC mode
( ): PB mode
1-613-570-
16
AR-2 BOARD (SOLDER SIDE)
Q101
Q102
Q103
Q104
Q106
Q401
Q404
Q405
Q408
D101
1-613-570-
16

| Q · IC | D | ADJ | TP |
|---|---|---|---|
| | | | 402 |
| | | RV104,RV103 | |
| | | RV105 | 103 |
| 407 | | | |
| | | RV106 | |
| IC401 | | | |
| | | | 401 |
| | | RV402 | |
| 105, IC101 | | | |
| | | | 101 |
| | | | 102 |
| | | RV101 | |
| | | | 104 |
| | | LV101, RV102 | |
| | | | 104 |
| | | | 102<br>101 |
| 106 | | | |
| 102 | 101 | | |
| 401 | | | |
| 104, 101 | | | 401 |
| 103 | | | |
| 404 | | | |
| 408<br>405 | | | |
| | | | 402 |
| Q · IC | D | ADJ | TP |

**AR-2 BOARD (VIDEO)**



IC101 ① REC

IC101 ② REC/PB

IC101 ③ REC

IC101 ⑬ PB

IC101 ⑮, ⑯ PB

IC101 ㉔, ㊲ REC

IC101 ㉕, ㊱ REC

CN009 ① PB

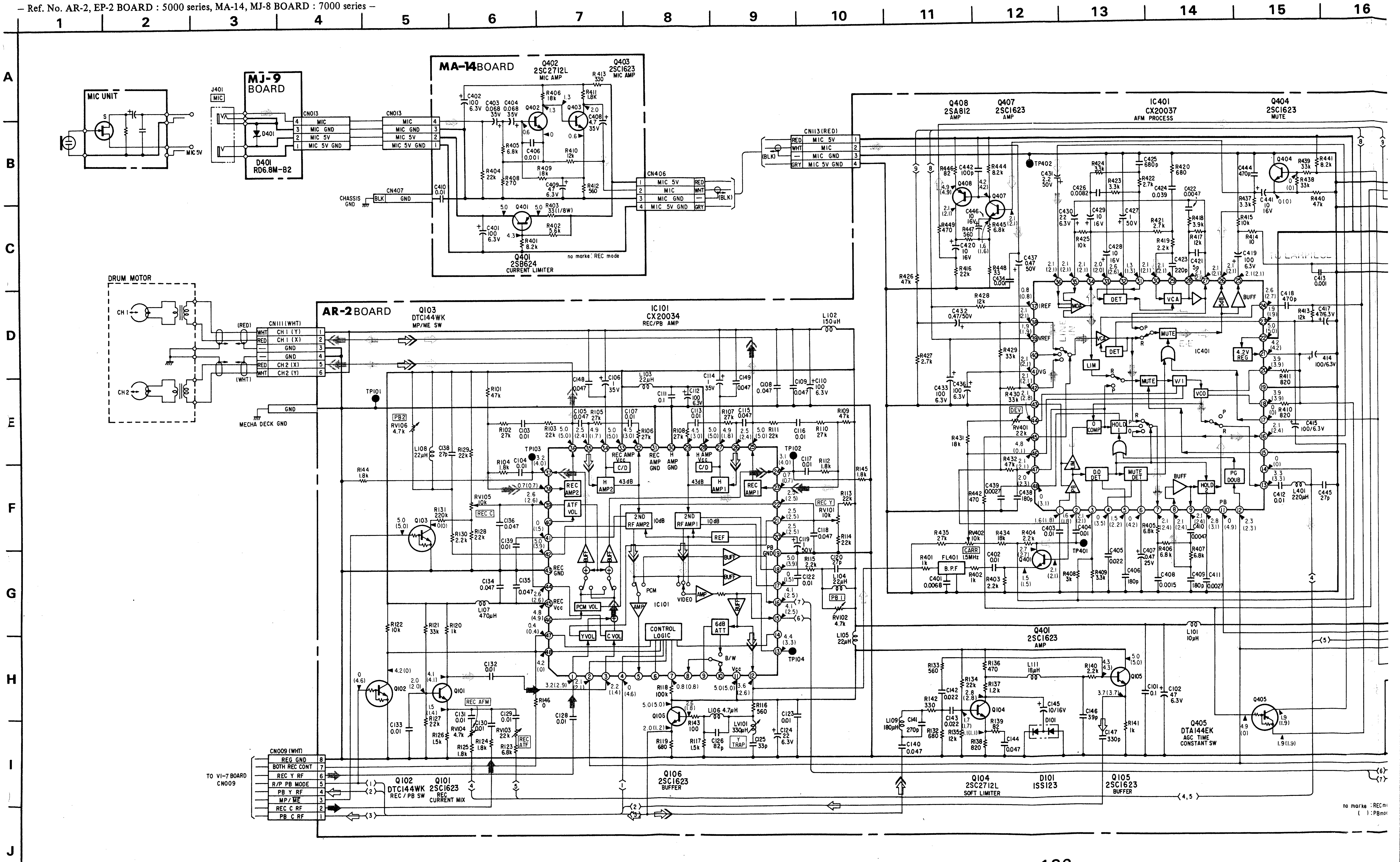
CN009 ④ PB

A
B
C
D
E
F
G
H
I
J

When indicating parts by reference number, please include the board name.

## MA-14 (MIC AMP), MJ-9 (MIC INPUT), AR-2 (AUDIO PROCESS, VIDEO HEAD AMP), EP-2 (EARPIECE OUTPUT) SCHEMATIC DIAGRAM

– Ref. No. AR-2, EP-2 BOARD : 5000 series, MA-14, MJ-8 BOARD : 7000 series –


1
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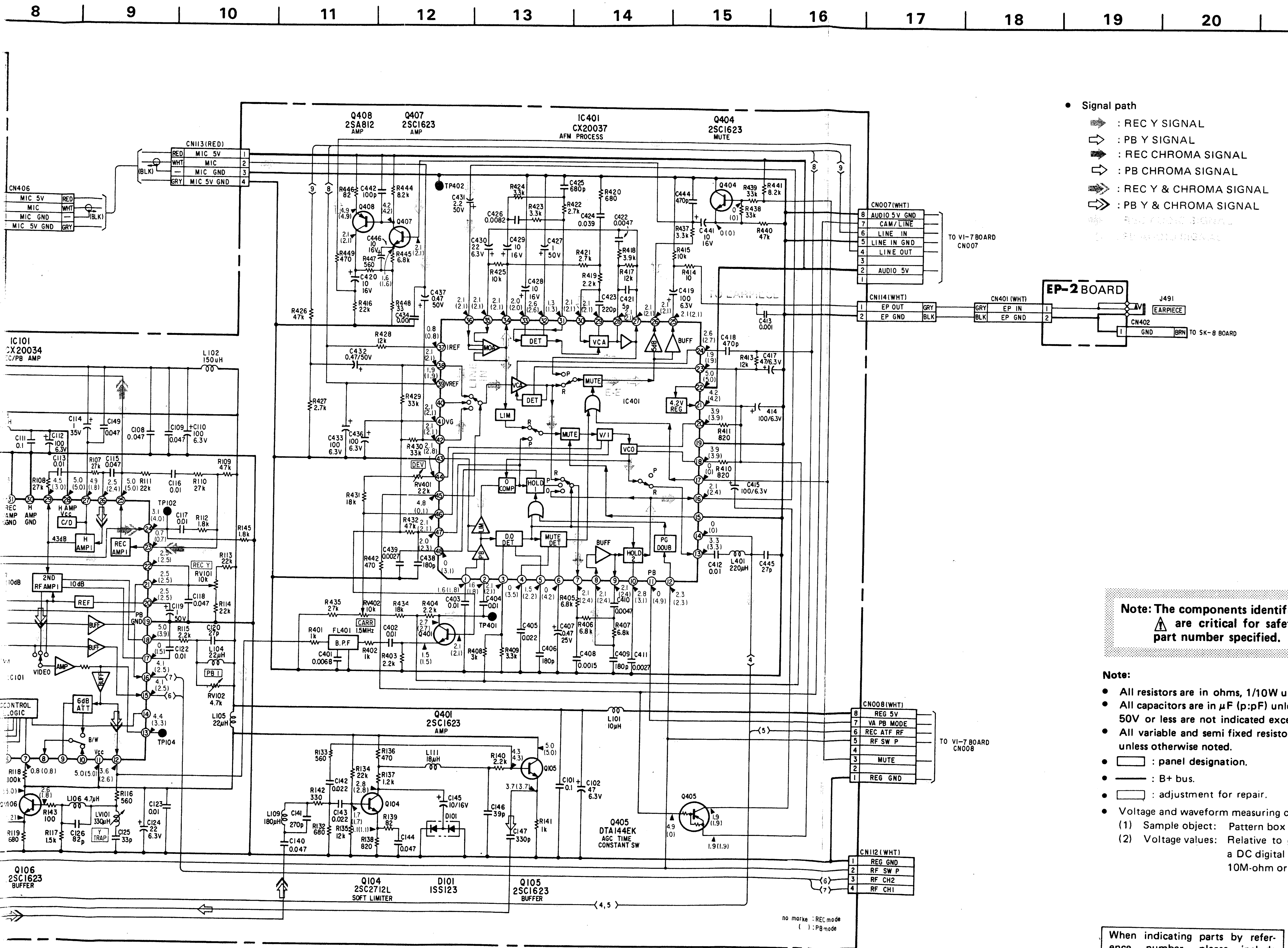
14
15
16
A
B
C
D
E
F
G
H
I
J
MIC UNIT
MIC 5V
J401 MIC
MJ-9 BOARD
D401 RD6.8M-B2
CN013
MIC
MIC GND
MIC 5V
MIC 5V GND
CHASSIS GND
CN407
BLK
GND
MA-14 BOARD
Q402 2SC2712L MIC AMP
Q403 2SC1623 MIC AMP
Q401 2SB624 CURRENT LIMITER
no marke : REC mode
CN406
RED
WHT
GRY
CN113 (RED)
(BLK)
DRUM MOTOR
CH1
CH2
CN111 (WHT)
CH1 (Y)
CH1 (X)
CH2 (X)
CH2 (Y)
MECHA DECK GND
AR-2 BOARD
Q103 DTC144WK MP/ME SW
IC101 CX20034 REC/PB AMP
TP101
TP102
TP103
TP104
REC AMP2
ATF VOL
REC AMP1
H AMP2
H AMP1
2ND RF AMP2
2ND RF AMP1
REF
BUFF
PCM VOL
AMP
PCM
VIDEO
Y VOL
C VOL
CONTROL LOGIC
6dB ATT
B/W
REC GND
REC Vcc
REC AFM
REC C
REC Y
PB1
PB2
CN009 (WHT)
REG GND
BOTH REC CONT
REC Y RF
R/P PB MODE
PB Y RF
MP/ME
REC C RF
PB C RF
TO VI-7 BOARD CN009
Q102 DTC144WK REC / PB SW
Q101 2SC1623 REC CURRENT MIX
Q106 2SC1623 BUFFER
Q104 2SC2712L SOFT LIMITER
D101 1SS123
Q105 2SC1623 BUFFER
Q401 2SC1623 AMP
Q405 DTA144EK AGC TIME CONSTANT SW
Q408 2SA812 AMP
Q407 2SC1623 AMP
IC401 CX20037 AFM PROCESS
Q404 2SC1623 MUTE
TP401
TP402
FL401 1.5MHz B.P.F
CARR
DEV
IREF
VREF
VG
DET
VCA
LIM
MUTE
V/I
VCO
4.2V REG
COMP
HOLD
0.0 DET
MUTE DET
PG DOUB
no marke : REC mode
( ) : PB mode


8
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22
23
A
B
C
D
E
F
G
H
I
J
Q408 2SA812 AMP
Q407 2SC1623 AMP
IC401 CX20037 AFM PROCESS
Q404 2SC1623 MUTE
CN113 (RED)
MIC 5V
MIC
MIC GND
MIC 5V GND
CN406
IC101 CX20034 REC/PB AMP
TP402
TP401
TP102
TP104
CN007 (WHT)
AUDIO 5V GND
CAM/LINE
LINE IN
LINE IN GND
LINE OUT
AUDIO 5V
TO VI-7 BOARD CN007
CN114 (WHT)
EP OUT
EP GND
CN401 (WHT)
EP IN
EP GND
EP-2 BOARD
J491
EARPIECE
CN402
GND
TO SK-8 BOARD
CN008 (WHT)
REG 5V
VA PB MODE
REC ATF RF
RF SW P
MUTE
REG GND
TO VI-7 BOARD CN008
CN112 (WHT)
REG GND
RF SW P
RF CH2
RF CH1
Q401 2SC1623 AMP
Q405 DTA144EK AGC TIME CONSTANT SW
Q104 2SC2712L SOFT LIMITER
D101 1SS123
Q105 2SC1623 BUFFER
Q106 2SC1623 BUFFER
FL401 1.5MHz
B.P.F
CARR
DEV
no marke : REC mode
( ) : PB mode

- Signal path
  - ➡ : REC Y SIGNAL
  - ⇨ : PB Y SIGNAL
  - ➡ : REC CHROMA SIGNAL
  - ⇨ : PB CHROMA SIGNAL
  - ⇛ : REC Y & CHROMA SIGNAL
  - ⇛ : PB Y & CHROMA SIGNAL

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

**Note:**

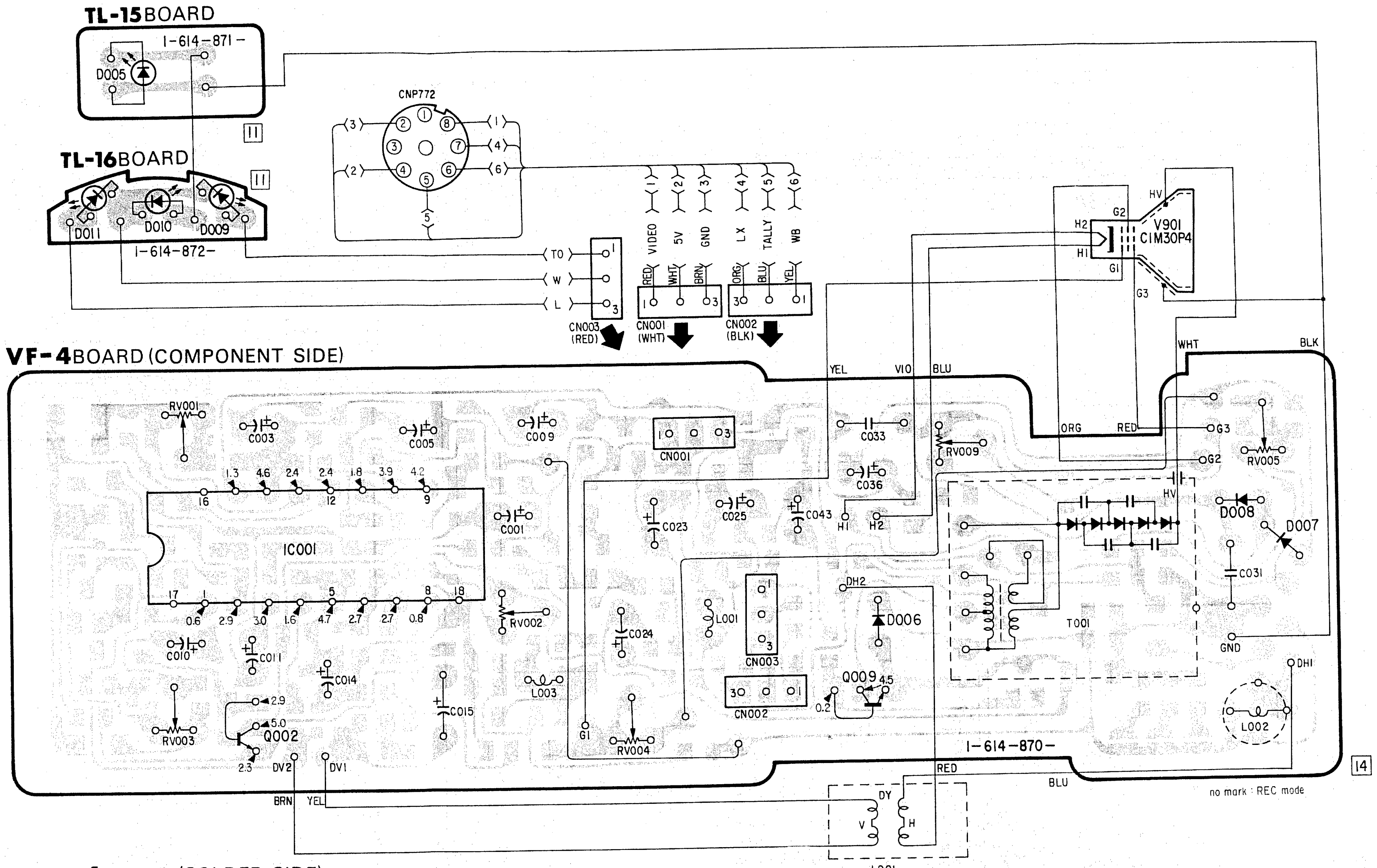
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in $\mu$F (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ——— : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box colour bars.
  - (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

When indicating parts by reference number, please include the board name.

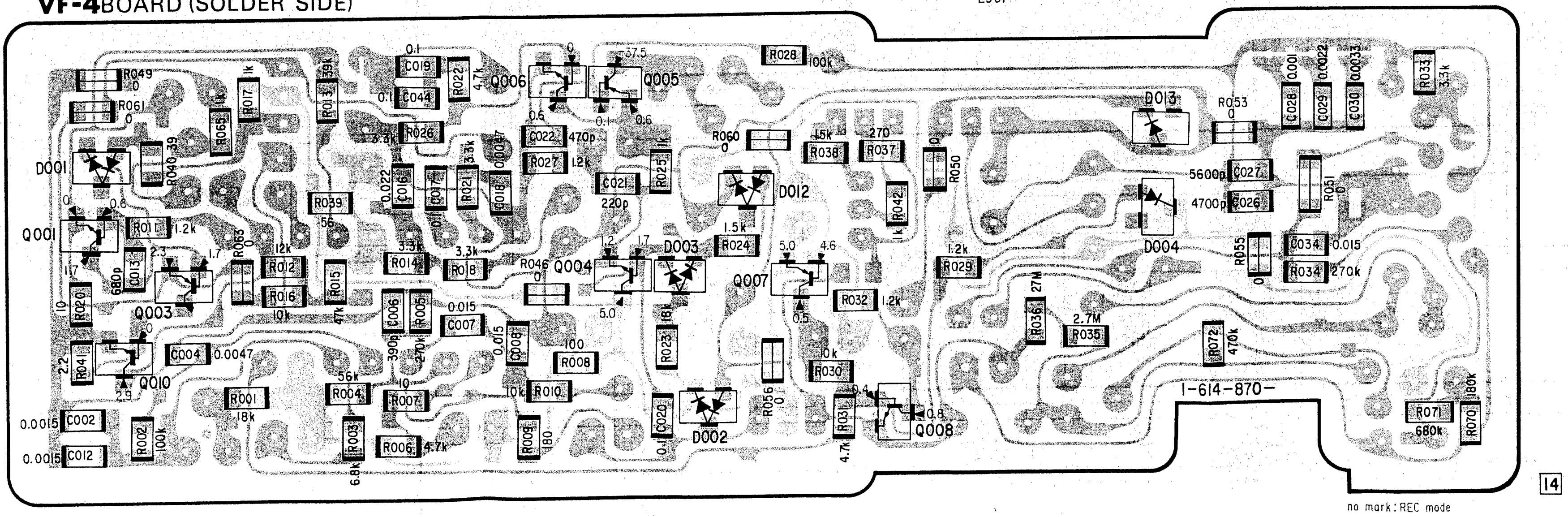
## VF-4 (VIDEO AMP, VIDEO OUT, H. OUT, V. OUT), TL-15 (LED), TL-16 (LED) PRINTED WIRING BOARDS

– Ref. No. VF-4, TL-15, TL-16 BOARD : 9000 series –

| | Q, IC | D | ADJ |
|---|---|---|---|
| A | | 005 | |
| B | | 011 009<br>010 | |
| C | | | |
| D | | 008 | RV001<br>RV006,RV005 |
| E | IC001 | 007<br>006 | RV002 |
| F | 002 009 | | RV003<br>RV004 |
| G | 006,005 | | |
| H | 001<br>003 004 007 | 013<br>001<br>012<br>004<br>003 | |
| I | 010<br>008 | 002 | |
| | Q,IC | D | ADJ |


TL-15 BOARD
1-614-871-
D005
TL-16 BOARD
D011
D010
D009
1-614-872-
CNP772
CN003 (RED)
CN001 (WHT)
CN002 (BLK)
VIDEO
5V
GND
LX
TALLY
WB
V901
C1M30P4
VF-4 BOARD (COMPONENT SIDE)
IC001
T001
L901
DY
1-614-870-
no mark : REC mode

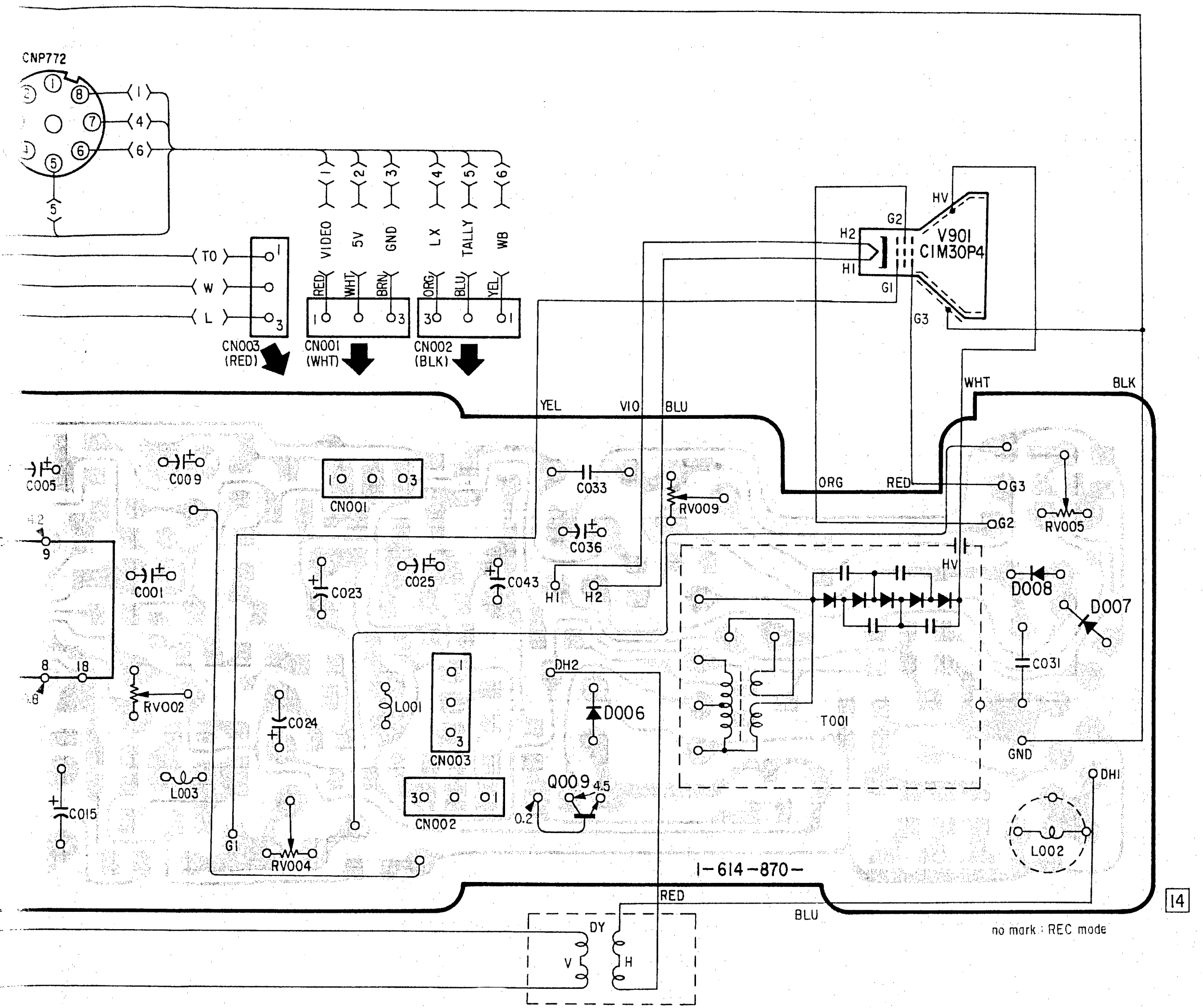
VF-4 BOARD (SOLDER SIDE)

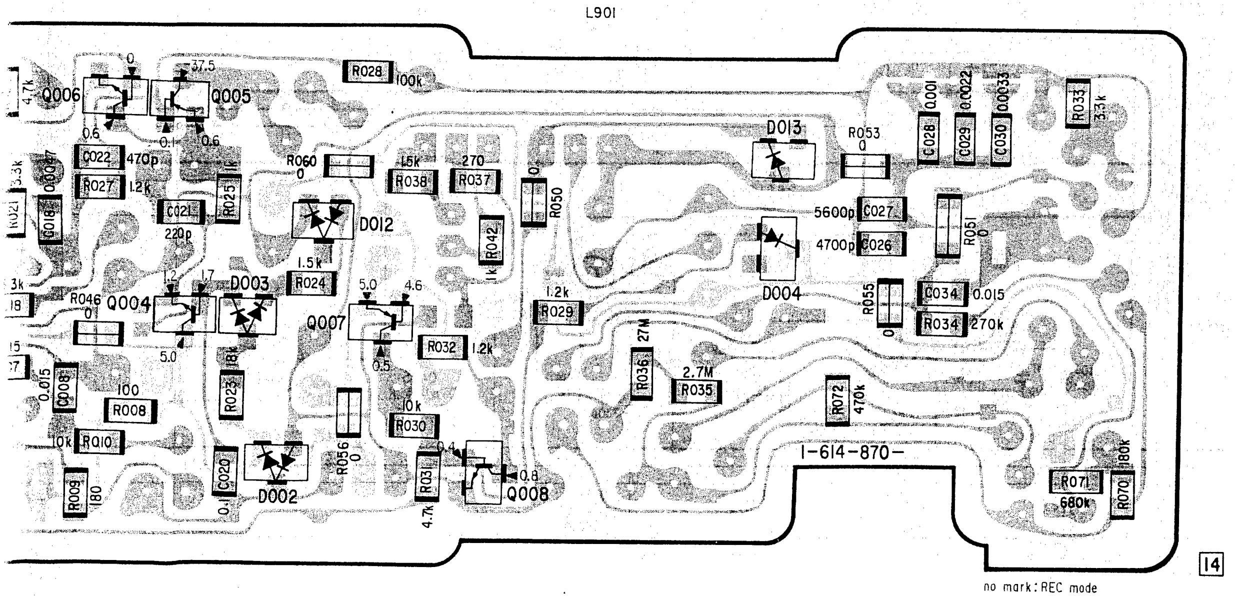

1-614-870-
no mark : REC mode

Note:
- ▨ : pattern from the side whi
- ▨ : B+ pattern from the side
- ▨ : patter of the rear side.

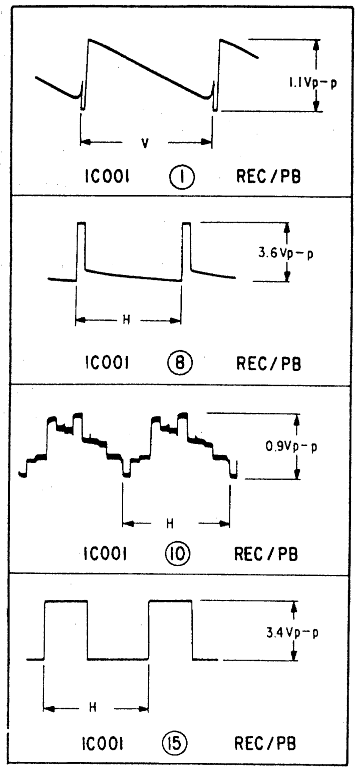
# VIEWFINDER VIEWFINDER

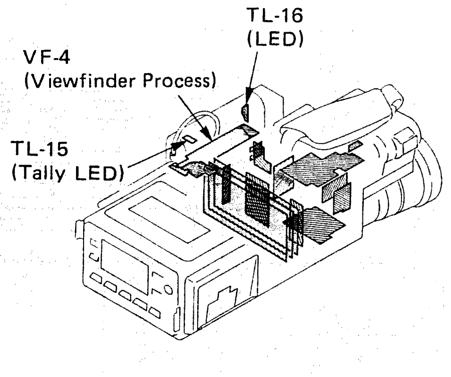
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23


CNP772
TO
W
L
CN003 (RED)
CN001 (WHT)
CN002 (BLK)
VIDEO
5V
GND
LX
TALLY
WB
RED
WHT
BRN
ORG
BLU
YEL
V901 C1M30P4
HV
G2
H2
H1
G1
G3
WHT
BLK
YEL
VIO
BLU
ORG
RED
C005
C009
CN001
C033
RV009
RV005
C001
C023
C025
C043
C036
H1
H2
D008
D007
C031
RV002
L001
CN003
DH2
D006
T001
C024
GND
L003
C015
CN002
Q009
4.5
0.2
DH1
G1
RV004
L002
1-614-870-
RED
BLU
DY
V
H
L901
no mark : REC mode
14


Q006
Q005
37.5
R028
100k
D013
R053
C028
C029
C030
C001
C0022
C0033
R033
3.3k
C022
470p
R027
1.2k
C021
220p
R025
R060
R038
1.5k
R037
270
D012
R050
R042
5600p C027
4700p C026
R051
Q004
D003
R024
1.5k
Q007
5.0
4.6
R029
1.2k
D004
R055
C034 0.015
R034 270k
R046
R032
1.2k
R036
27M
R035
2.7M
R072
470k
R008
100
R010
R023
R030
10k
R056
R031
4.7k
Q008
D002
C020
1-614-870-
R071
680k
R070
180k
R009
180
14
no mark : REC mode

**VF-4** BOARD




TL-16
(LED)
VF-4
(Viewfinder Process)
TL-15
(Tally LED)

**Note:**

- ▒ : pattern from the side which enables seeing.
- ▒ : B+ pattern from the side which enables seeing.
- ▒ : patter of the rear side.

**Caution:**

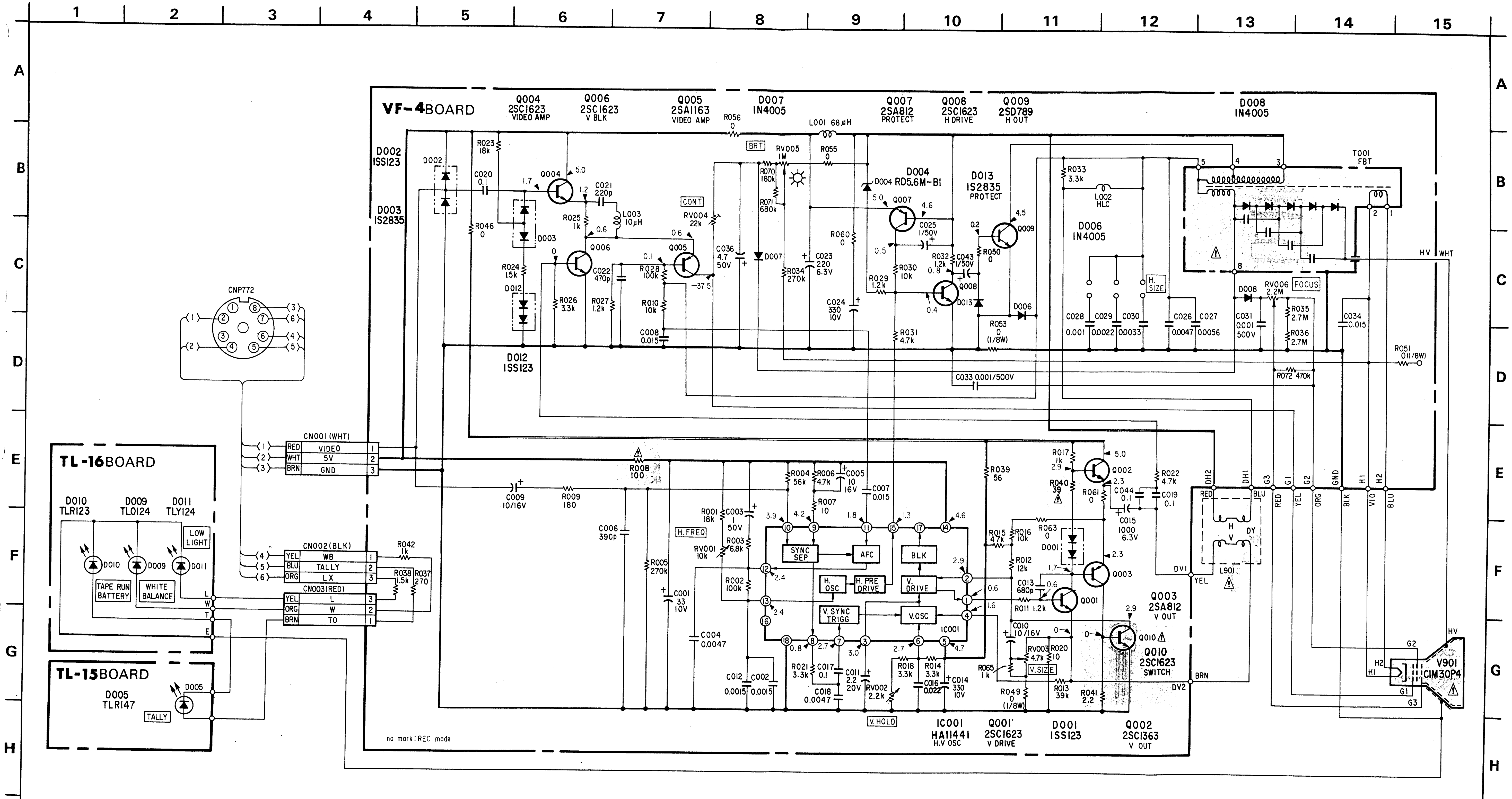
| | |
|---|---|
| Pattern face side: (Solder Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component Side) | Parts on the parts face side seen from the part face are indicated. |

When indicating parts by reference number, please include the board name.

A B C D E F G H I J

## VF-4 (VIDEO AMP, VIDEO OUT, H. OUT, V. OUT), TL-15 (LED), TL-16 (LED) SCHEMATIC DIAGRAM

– Ref. No. VF-4, TL-15, TL-16 BOARD : 9000 series –


VF-4BOARD
TL-16BOARD
TL-15BOARD
Q004 2SC1623 VIDEO AMP
Q006 2SC1623 V BLK
Q005 2SA1163 VIDEO AMP
D007 1N4005
Q007 2SA812 PROTECT
Q008 2SC1623 H DRIVE
Q009 2SD789 H OUT
D008 1N4005
D002 1SS123
D003 1S2835
D012 1SS123
D004 RD5.6M-B1
D013 1S2835 PROTECT
D006 1N4005
T001 FBT
L001 68μH
L002 HLC
L003 10μH
BRT
CONT
H. SIZE
FOCUS
H. FREQ
V. HOLD
V. SIZE
RV005 1M
RV004 22k
RV006 2.2M
RV001 10k
RV002 2.2k
RV003 4.7k
CNP772
CN001 (WHT)
VIDEO
5V
GND
CN002 (BLK)
WB
TALLY
LX
CN003 (RED)
L
W
TO
D010 TLR123
D009 TL0124
D011 TLY124
TAPE RUN BATTERY
WHITE BALANCE
LOW LIGHT
D005 TLR147
TALLY
SYNC SEP
AFC
BLK
H. OSC
H. PRE DRIVE
V. DRIVE
V. SYNC TRIGG
V. OSC
IC001
IC001 HA11441 H.V OSC
Q001 2SC1623 V DRIVE
D001 1SS123
Q002 2SC1363 V OUT
Q003 2SA812 V OUT
Q010 2SC1623 SWITCH
L901
DY
V901 CIM30P4
HV
no mark: REC mode

**Note:**

- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.

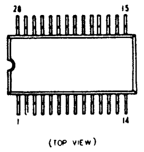
- —— : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box colour bars.
  - (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

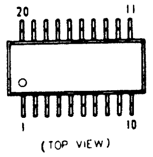
When indicating parts by reference number, please include the board name.

## SEMICONDUCTORS

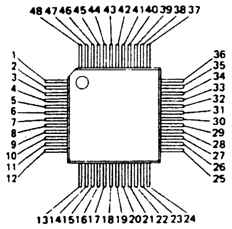
**CX7930**
**CX7930-1**
**CX7930A**


28
15
1
14
(TOP VIEW)

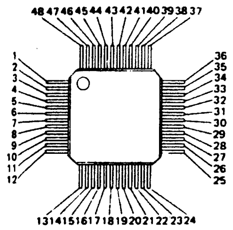
**CX7991**


20
11
1
10
(TOP VIEW)

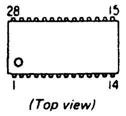
**CX20030**
**CX20031**
**CX20032**
**CX20053**
**CX20055**
**CX20056**
**CX23014**
**CX23047B**
**CX23054**
**MB88505-342M**


48 47 46 45 44 43 42 41 40 39 38 37
1 2 3 4 5 6 7 8 9 10 11 12
36 35 34 33 32 31 30 29 28 27 26 25
13 14 15 16 17 18 19 20 21 22 23 24

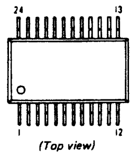
**CX20034**
**CX20037**
**CX20151**


48 47 46 45 44 43 42 41 40 39 38 37
1 2 3 4 5 6 7 8 9 10 11 12
36 35 34 33 32 31 30 29 28 27 26 25
13 14 15 16 17 18 19 20 21 22 23 24

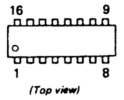
**CX20035**
**CX20036**
**CX22022**


28
15
1
14
(Top view)

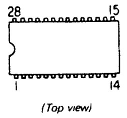
**CX20114**


24
13
1
12
(Top view)

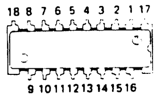
**CX20115**
**CX22021**
**MB7052PF**


16
9
1
8
(Top view)

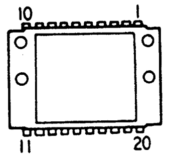
**CX23039**


28
15
1
14
(Top view)

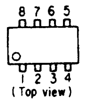
**HA11441**


18 8 7 6 5 4 3 2 1 17
9 10 11 12 13 14 15 16

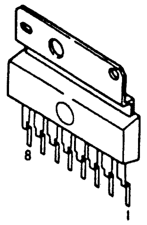
**ICX-021K**



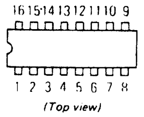
**MB3763PF**
**SN75361AP**


8 7 6 5
1 2 3 4
(Top view)

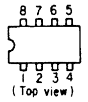
**MB3763PS**



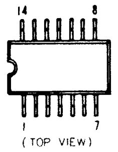
**MB88201-170N**
**TC4526BF**


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

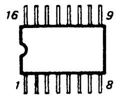
**MMH0026CP1**


8 7 6 5
1 2 3 4
(Top view)

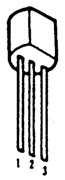
**TC4013BF**
**TC4066BF**
**TC4069UBF**
**TC504013BF**


14
8
1
7
(TOP VIEW)

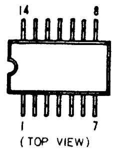
**TC4028BF**
**TC4052BF**



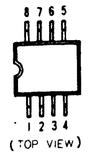
**TL431CLP**
**TL431CLPB**



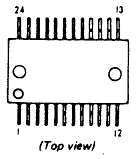
**μPC324G2**


14
8
1
7
(TOP VIEW)

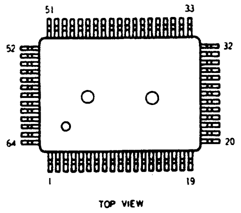
**μPC358G2**
**μPC393G2**


8 7 6 5
1 2 3 4
(TOP VIEW)

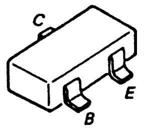
**μPD6107G**


24
13
1
12
(Top view)

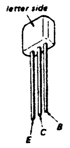
**μPD7503G-324**


51
33
52
32
64
20
1
19
TOP VIEW

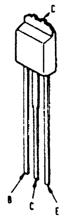
**2SA812**
**2SA1122**
**2SA1162**
**2SA1163**
**2SA1179**
**2SA1226**
**2SB624-BV4**
**2SC1621**
**2SC1623**
**2SC2223**
**2SC2223-F14**
**2SC2412**
**2SC2712**
**2SC2812**
**2SC3052**
**2SD596**
**2SD1048**
**DTA114EK**
**DTA114ES**
**DTA124EK**
**DTA144EK**
**DTA144WK**
**DTC114EK**
**DTC143TK**
**DTC144EK**
**DTC144WK**



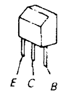
**2SA1175**


letter side
E C B

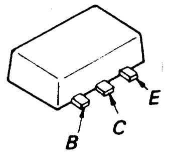
**2SA1242LB**
**2SA1385**



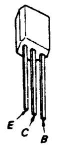
**2SB733**
**2SB733-4**
**2SB734**
**2SD789**



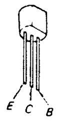
**2SB798**
**2SD999**
**2SD1005**



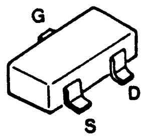
**2SC633-SP8**



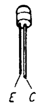
**2SC1363**
**2SC1364**
**2SC1475**
**2SC1475-13**



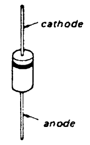
**2SK94**
**2SK160**



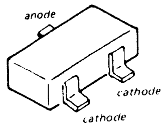
**NJL7141E**



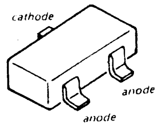
**1N4005**
**1S1555**


cathode
anode

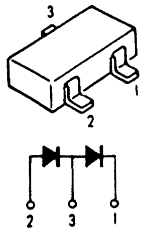
**1S2835**
**DAP202K**
**MA151WA**


anode
cathode
cathode

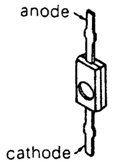
**1S2837**
**DAN202K**
**MA151WK**


cathode
anode
anode

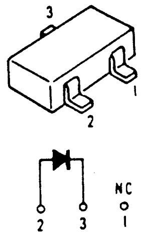
**1SS123**
**DA204K**
**MA153**



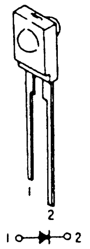
**1T32**
**1T32-2**


anode
cathode

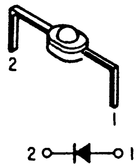
**E10DS2**
**E10QS03**
**RD3.9M-B1**
**RD3.9M-B2**
**RD5.1M-B1**
**RD5.1M-B2**
**RD5.6M-B1**
**RD5.6M-B2**
**RD6.8M-B1**
**RD6.8M-B2**
**RD6.8M-B3**
**RD9.1M-B1**
**RD12M-B1**
**RD12M-B2**
**RD12M-B3**



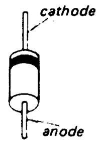
**GL-450S**



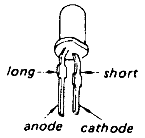
**GL-1EG102**
**GL-1HY102**
**GL-1PR102**



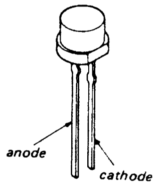
**HZ4ALL**
**HZ5BLL**
**HZ5CLL**
**RD3.3E-L1**
**RD4.3E-B2**
**RD6.2E-L2**


cathode
anode

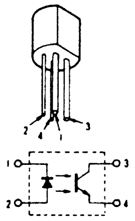
**TLO123**
**TLO124**
**TLR123**
**TLR124**
**TLY124**


long
short
anode
cathode

**TLR147**


anode
cathode

**NJL5141E**



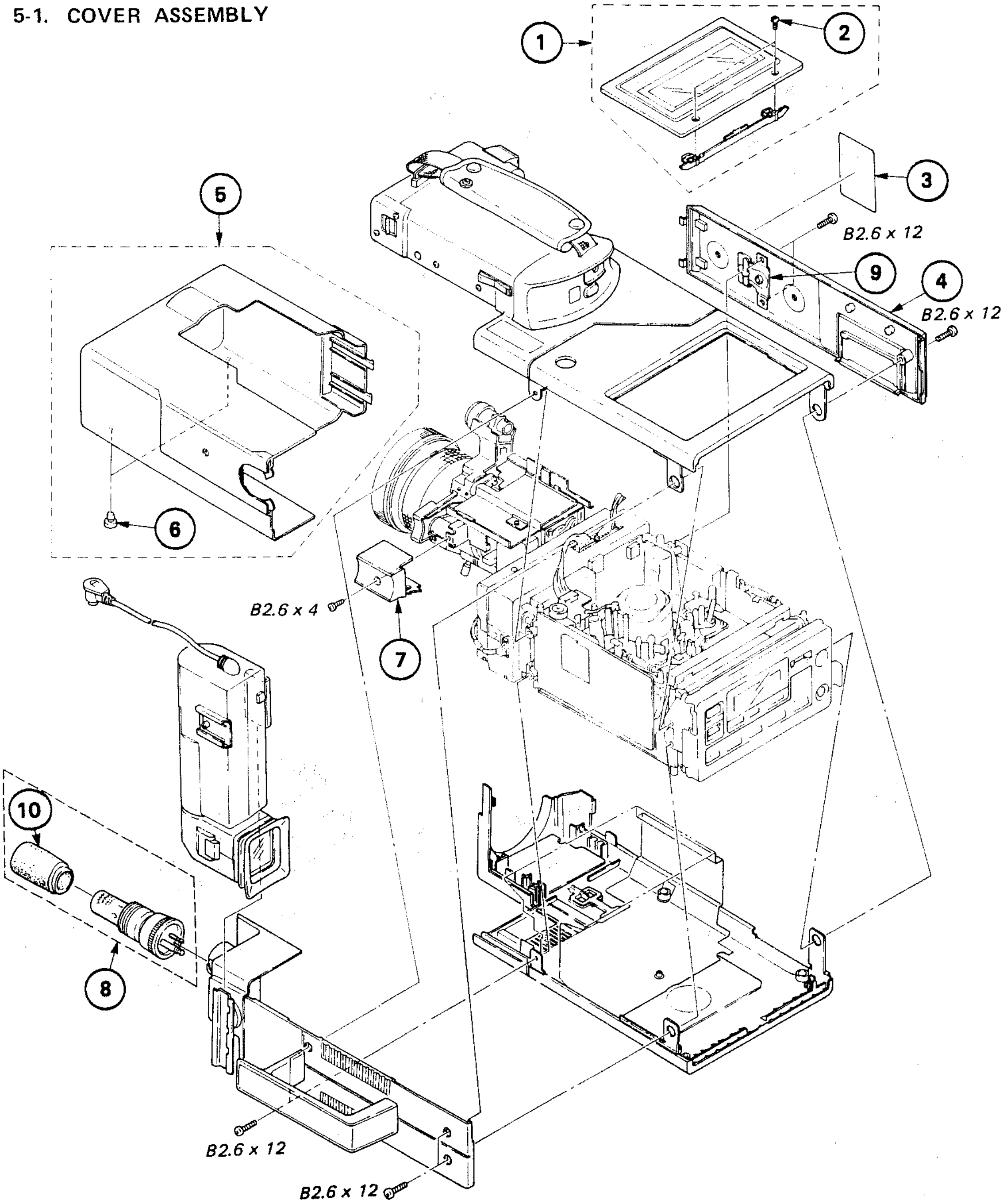
# SECTION 5
# EXPLODED VIEWS

NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

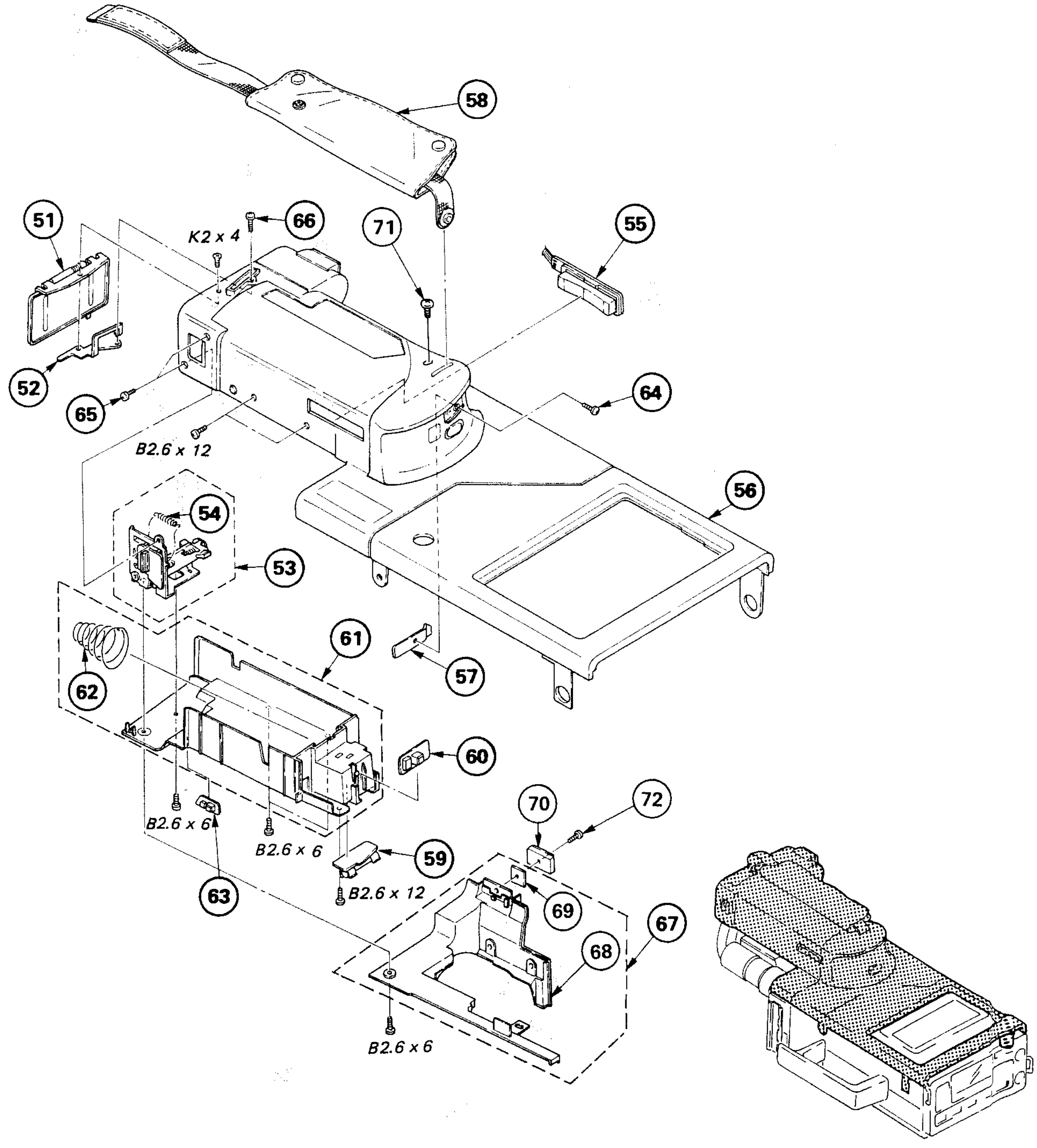
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

## 5-1. COVER ASSEMBLY



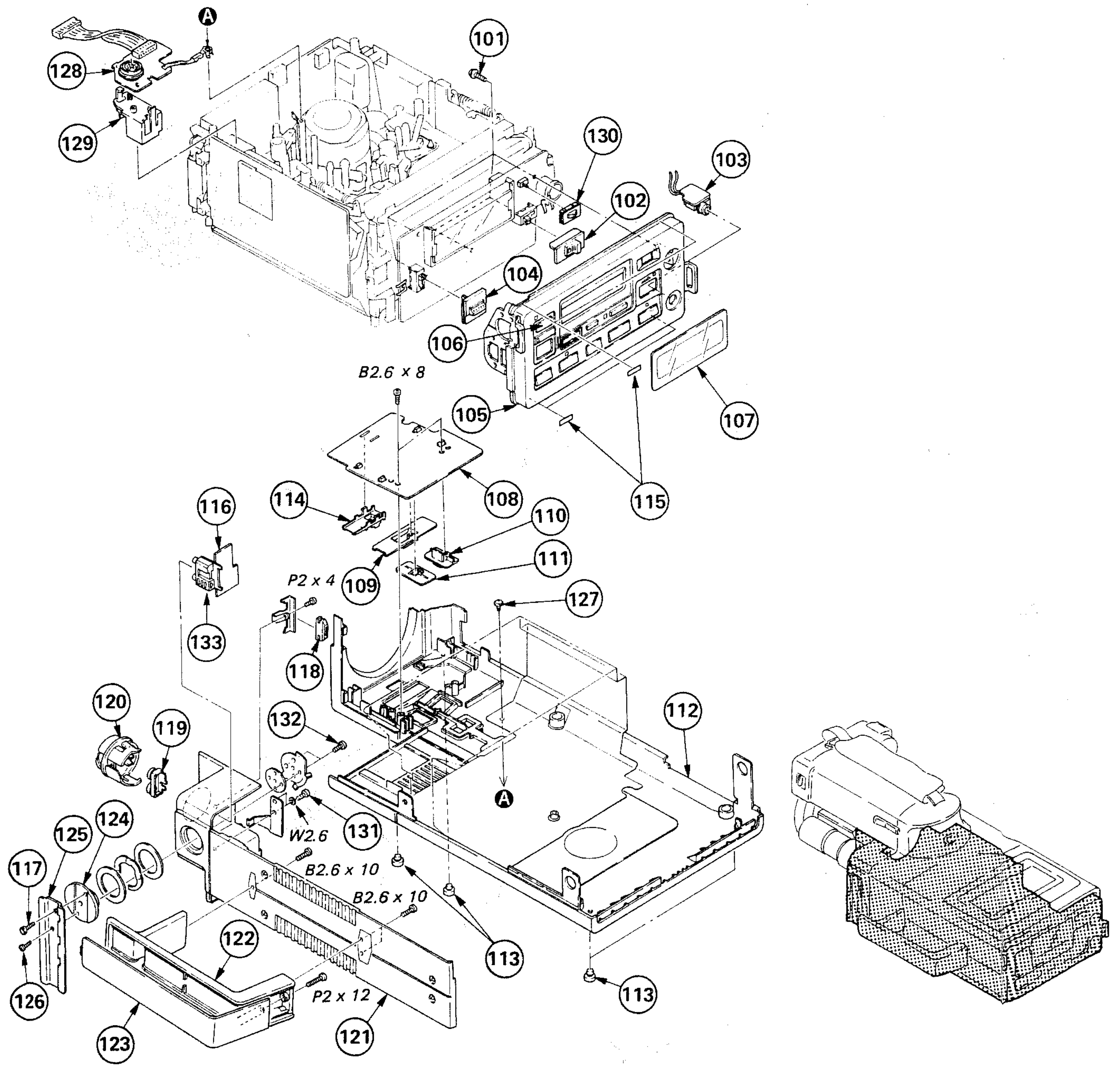
| No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | X-3686-674-1 | LID ASSY, CASSETTE | 2 |
| 2 | 3-686-804-01 | SCREW (2X5), TAPPING | |
| 3 | *3-693-287-01 | LABEL, MODEL NUMBER (AEP,UK MODEL) | |
| | *3-693-286-01 | LABEL, MODEL NUMBER (W.G MODEL) | |
| 4 | X-3686-650-1 | CABINET (LOWER) ASSY | 9 |
| 5 | X-3686-684-1 | COVER ASSY, CAMERA HEAD | 6 |
| 6 | 3-688-931-01 | FOOT, RUBBER | |
| 7 | 3-696-008-01 | CAP, CATCHER, RAY | |
| 8 | 8-810-510-90 | MIC (C-2008 SET) ASSY | 10 |
| 9 | 3-688-936-01 | SCREW, TRIPOD | |
| 10 | 2-536-739-01 | MIC HOOD | |

## 5-2. CABINET (LEFT) ASSEMBLY


58
51
66
K2 x 4
71
55
52
65
64
B2.6 x 12
56
54
53
61
57
62
60
70
72
B2.6 x 6
63
B2.6 x 6
59
B2.6 x 12
69
67
68
B2.6 x 6

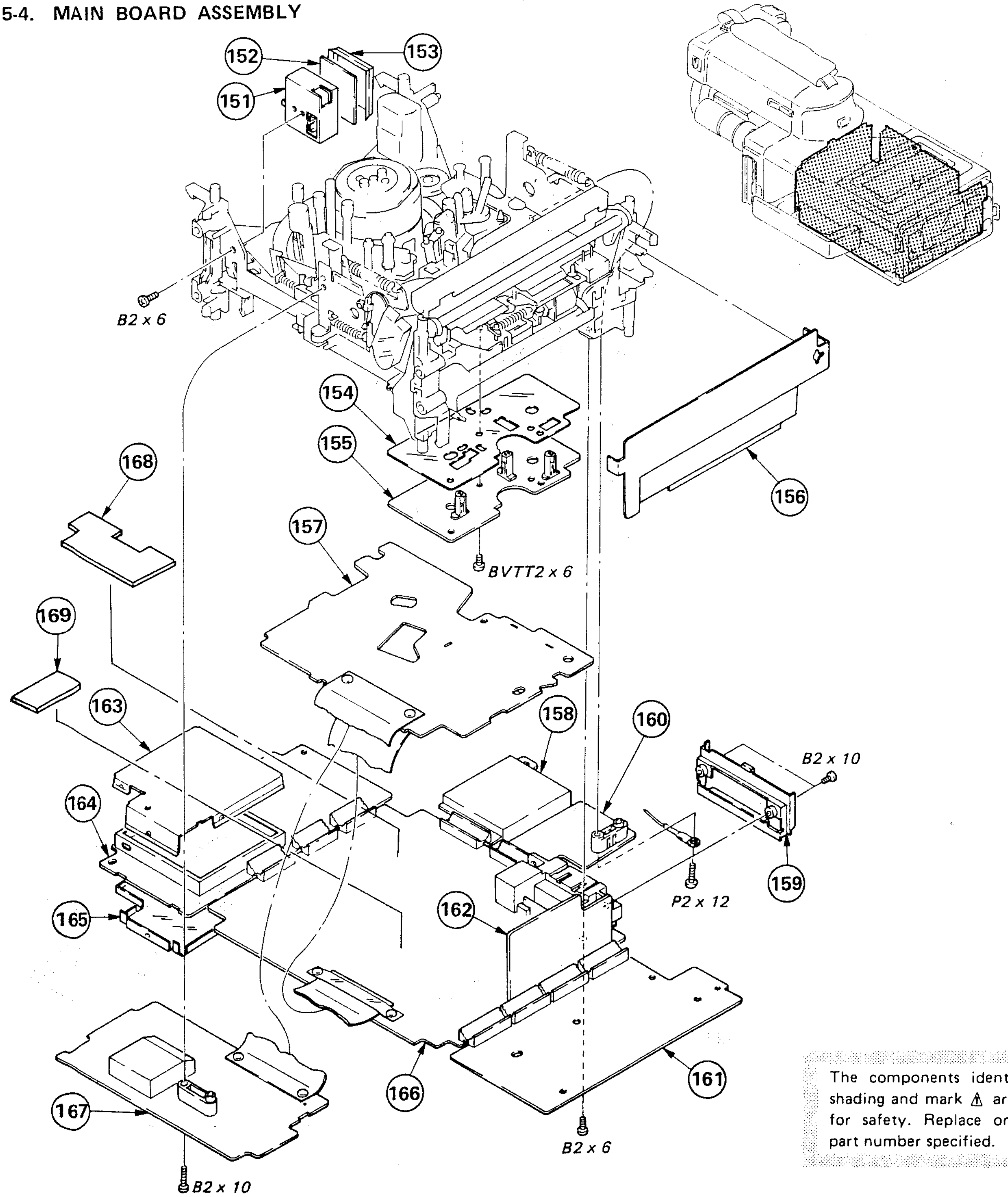
| No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | X-3686-613-1 | LID ASSY, BATTERY | |
| 52 | 3-688-926-01 | BRACKET (FRONT), GRIP | |
| 53 | X-3686-560-1 | LOCK ASSY, BATTERY | 54 |
| 54 | 3-570-898-00 | SPRING, TENSION | |
| 55 | 1-554-944-11 | SWITCH, PUSH (ZOOM) S904 | |
| 56 | X-3686-651-1 | CABINET (LEFT) SUB ASSY | 51, 52, 57, 58, 64, 66, 71 |
| 57 | 3-696-035-01 | BRACKET, BELT | |
| 58 | 3-696-007-01 | BELT, GRIP | |
| 59 | *1-613-581-11 | FU-34 BOARD | |
| 60 | *1-616-585-11 | SS-57 BOARD | |
| 61 | X-3686-664-1 | HOLDER ASSY, BATTERY | 62 |
| 62 | 3-686-775-01 | SPRING | |
| 63 | *1-616-649-11 | SS-58 BOARD | |
| 64 | 3-686-999-31 | SCREW (2.6X12) (C LOCK), (+) B | |
| 65 | 3-686-999-11 | SCREW (2.6X6) (C LOCK), (+) B | |
| 66 | 3-688-901-01 | SCREW (3X7) (C LOCK), (+) B | |
| 67 | X-3686-672-1 | CABINET (YF) ASSY | 68, 69 |
| 68 | 3-696-010-01 | CABINET (YF) | |
| 69 | *3-693-298-01 | BRACKET, RUBBER FOOT | |
| 70 | 3-693-297-01 | FOOT, RUBBER, RADIATION | |
| 71 | 3-696-059-01 | SCREW (M2.6X12) (C LOCK), +K | |
| 72 | 3-686-999-01 | SCREW (2.6X4) (C LOCK), (+) B | |

## 5-3. CONTROL PANEL, CABINET (UPPER, RIGHT) ASSEMBLY


A
101
128
129
130
103
102
104
106
B2.6 x 8
105
107
116
114
108
110
115
111
P2 x 4
109
127
133
118
120
119
132
112
A
124
125
131
W2.6
117
B2.6 x 10
B2.6 x 10
122
113
126
P2 x 12
113
123
121

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | 3-669-480-11 | + PTPWH 2 | |
| 102 | 3-686-785-01 | BUTTON, REC | |
| 103 | *1-613-579-11 | EP-2 BOARD | |
| 104 | 3-686-798-01 | KNOB, EJECT | |
| 105 | 3-686-981-21 | PANEL, CONTROL | |
| 106 | 3-686-833-02 | BUTTON, POWER | |
| 107 | 3-686-786-11 | WINDOW, LCD | |
| 108 | *A-7060-231-A | RR-12 BOARD, COMPLETE | |
| 109 | 3-693-268-01 | KNOB, WB | |
| 110 | 3-688-933-01 | KNOB, IRIS | |
| 111 | 3-688-932-01 | KNOB, POWER, C | |
| 112 | X-3686-666-1 | CABINET (RIGHT) SUB ASSY | 113 |
| 113 | 3-688-931-01 | FOOT, RUBBER | |
| 114 | 3-693-267-01 | KNOB, F | |
| 115 | *3-880-474-00 | CUSHION, 15X5X0.3 | |
| 116 | *A-7060-230-A | MA-14 BOARD, COMPLETE | |
| 117 | 3-696-038-01 | SCREW (M2.6X4), SPECIAL HEAD | |
| 118 | *3-688-979-01 | CUSHION (X), MICROPHONE | |
| 119 | *3-686-776-01 | CUSHION (A), MICROPHONE | |
| 120 | 3-688-996-01 | HOLDER, MICROPHONE | |
| 121 | X-3686-665-1 | CABINET (UPPER) SUB ASSY | 117, 122-126<br>131, 132 |
| 122 | 3-688-934-11 | HANDLE (1) | |
| 123 | 3-688-935-01 | HANDLE (2) | |
| 124 | *3-693-209-11 | TABLE, ROTARY | |
| 125 | *3-696-064-01 | BRACKET, VF | |
| 126 | 3-696-039-01 | SCREW (2.6X4) (C LOCK), +P | |
| 127 | 3-703-502-31 | SCREW | |
| 128 | *1-613-580-11 | EF-3 BOARD | |
| 129 | *3-688-953-01 | HOLDER, EF | |
| 130 | 3-686-979-01 | KNOB, S/L | |
| 131 | 3-686-999-01 | SCREW (2.6X4) (C LOCK), (+) B | |
| 132 | 3-686-999-11 | SCREW (2.6X6) (C LOCK), (+) B | |
| 133 | *1-616-645-11 | MJ-9 BOARD | |

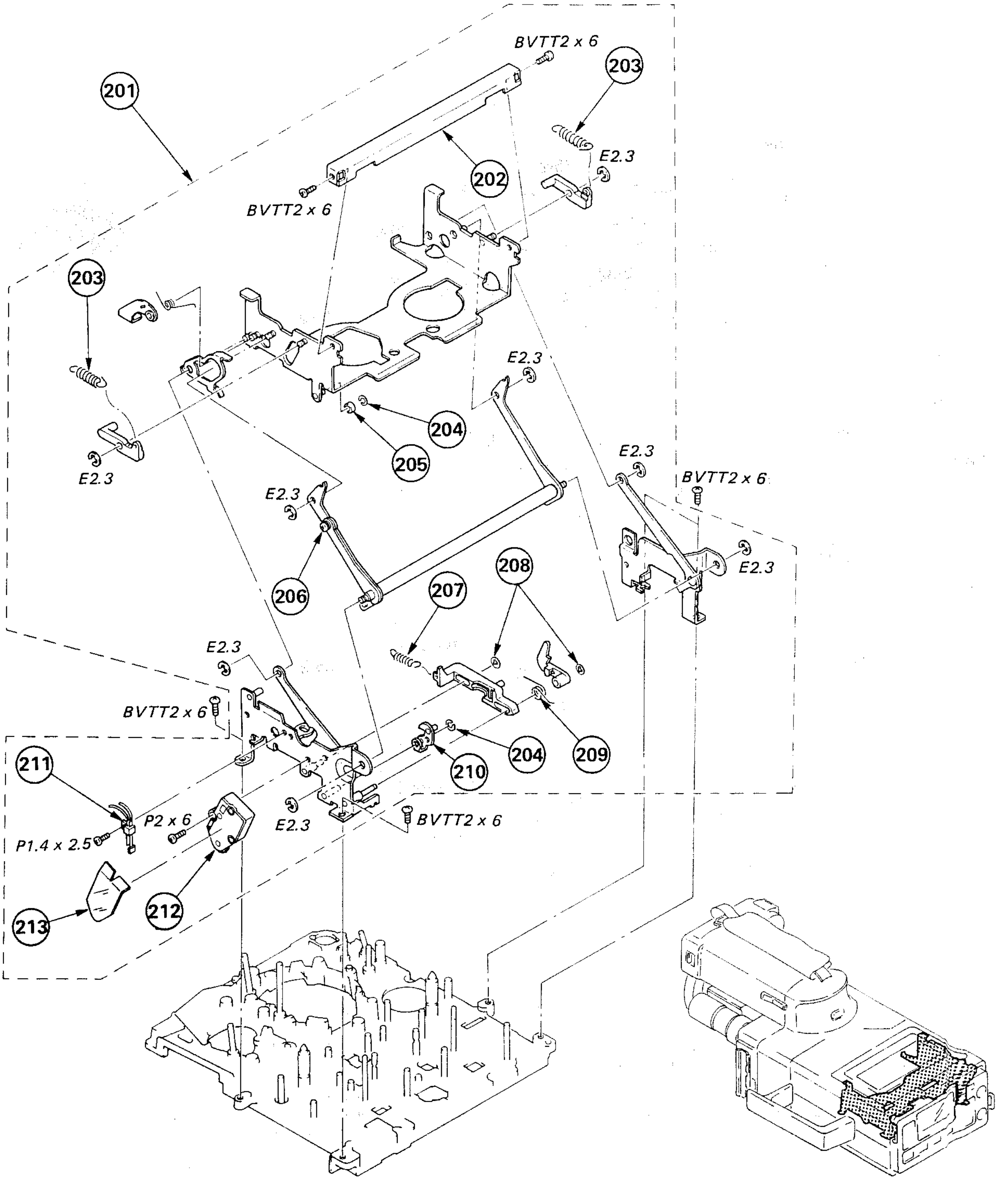
## 5-4. MAIN BOARD ASSEMBLY


152
153
151
B2 x 6
154
155
168
156
157
BVTT2 x 6
169
163
158
160
B2 x 10
164
159
P2 x 12
165
162
167
166
161
B2 x 6
B2 x 10

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

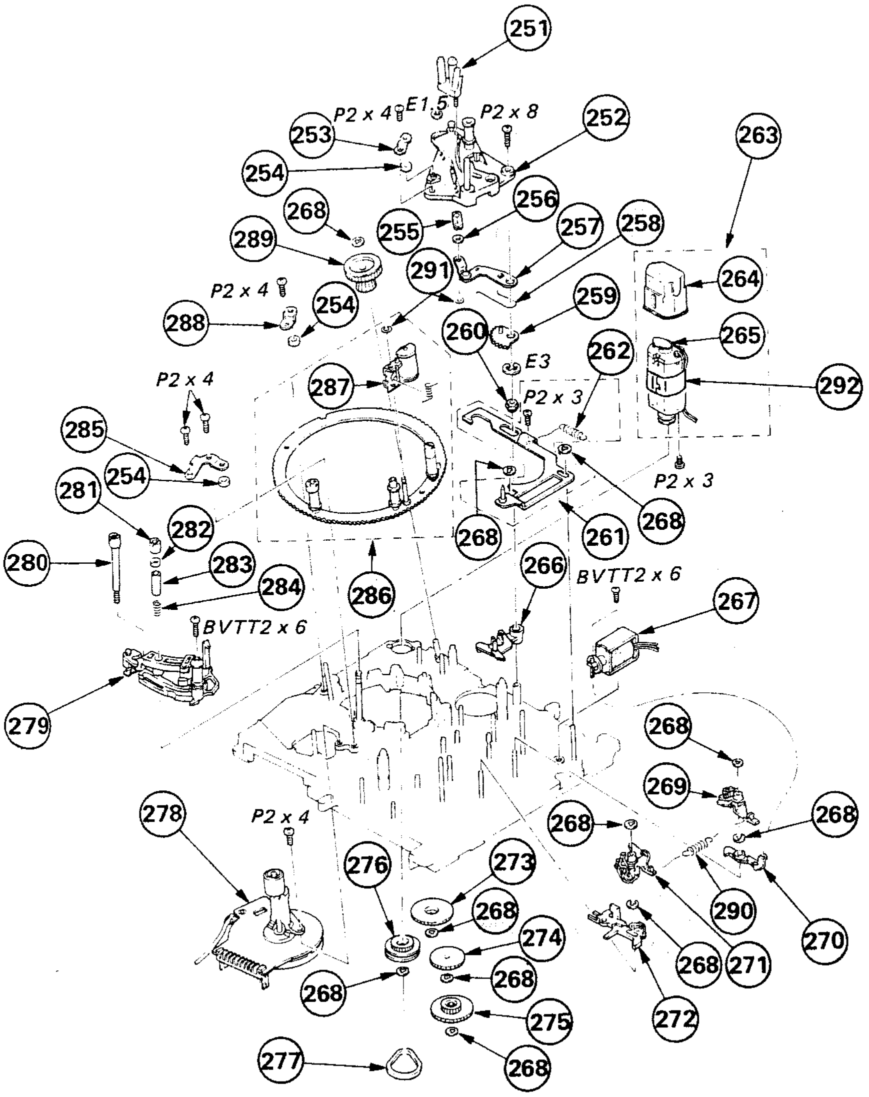
| No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | *3-686-955-01 | CASE (MAIN), SHIELD, FE | |
| 152 | *A-7060-222-A | FE-4 BOARD, COMPLETE | |
| 153 | *3-686-953-02 | LID, SHIELD CASE, FE | |
| 154 | *3-686-948-01 | INSULATOR, RS | |
| 155 | *A-7060-221-A | RS-5 BOARD, COMPLETE | |
| 156 | *3-686-947-01 | BLIND, CASSETTE COMPARTMENT | |
| 157 | *A-7060-243-A | MC-8 BOARD, COMPLETE | |
| 158 | ⚠.1-464-376-21 | CONVERTER, DC-DC DR901 | |
| 159 | *3-688-908-01 | COVER, M | |
| 160 | *A-7060-227-A | HS-5 BOARD, COMPLETE | |
| 161 | *A-7060-246-A | SK-8 BOARD, COMPLETE | |
| 162 | *A-7060-226-A | DS-8 BOARD, COMPLETE | |
| 163 | *3-686-954-01 | LID, UPPER, SHIELD CASE, AR | |
| 164 | *A-7060-245-A | AR-2 BOARD, COMPLETE | |
| 165 | *X-3686-585-1 | LID ASSY, BOTTOM, SHIELD CASE | |
| 166 | *A-7060-260-A | VI-7 BOARD, COMPLETE | 168, 169 |
| 167 | *A-7060-242-A | SV-14 BOARD, COMPLETE | |
| 168 | *A-7070-168-A | EX-3 BOARD, COMPLETE | |
| 169 | *1-616-826-11 | TK-2 BOARD | |

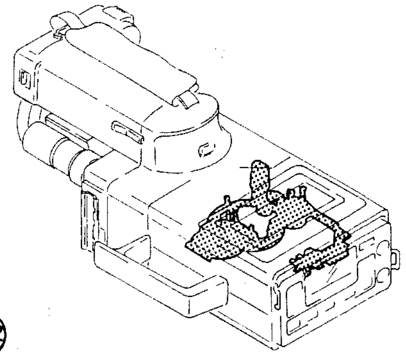
## 5-5. CASSETTE COMPARTMENT ASSEMBLY


201
202
203
BVTT2 x 6
E2.3
BVTT2 x 6
203
E2.3
E2.3
204
205
E2.3
BVTT2 x 6
E2.3
E2.3
206
207
208
E2.3
BVTT2 x 6
211
P2 x 6
E2.3
BVTT2 x 6
P1.4 x 2.5
204
209
210
212
213

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 201 | A-7040-005-A | CASSETTE COMPARTMENT ASSY | 202-213 |
| 202 | 3-686-718-01 | REINFORCEMENT | |
| 203 | 3-686-883-01 | SPRING, TENSION | |
| 204 | 3-578-265-11 | WASHER, STOPPER | |
| 205 | *3-686-693-01 | ROLLER, LOCK | |
| 206 | 3-672-561-00 | +PSW 2X4 | |
| 207 | 3-696-047-01 | SPRING, TENSION | |
| 208 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 209 | 3-686-694-01 | SPRING, TORSION | |
| 210 | *X-3686-541-1 | CLAW ASSY, LOCK | |
| 211 | 1-553-226-00 | SWITCH, LEAF (CASSETTE LOCK) | S01 |
| 212 | *3-681-528-00 | DAMPER | |
| 213 | *3-686-937-01 | INSULATOR, DAMPER | |

## 5-6. CHASSIS ASSEMBLY 1

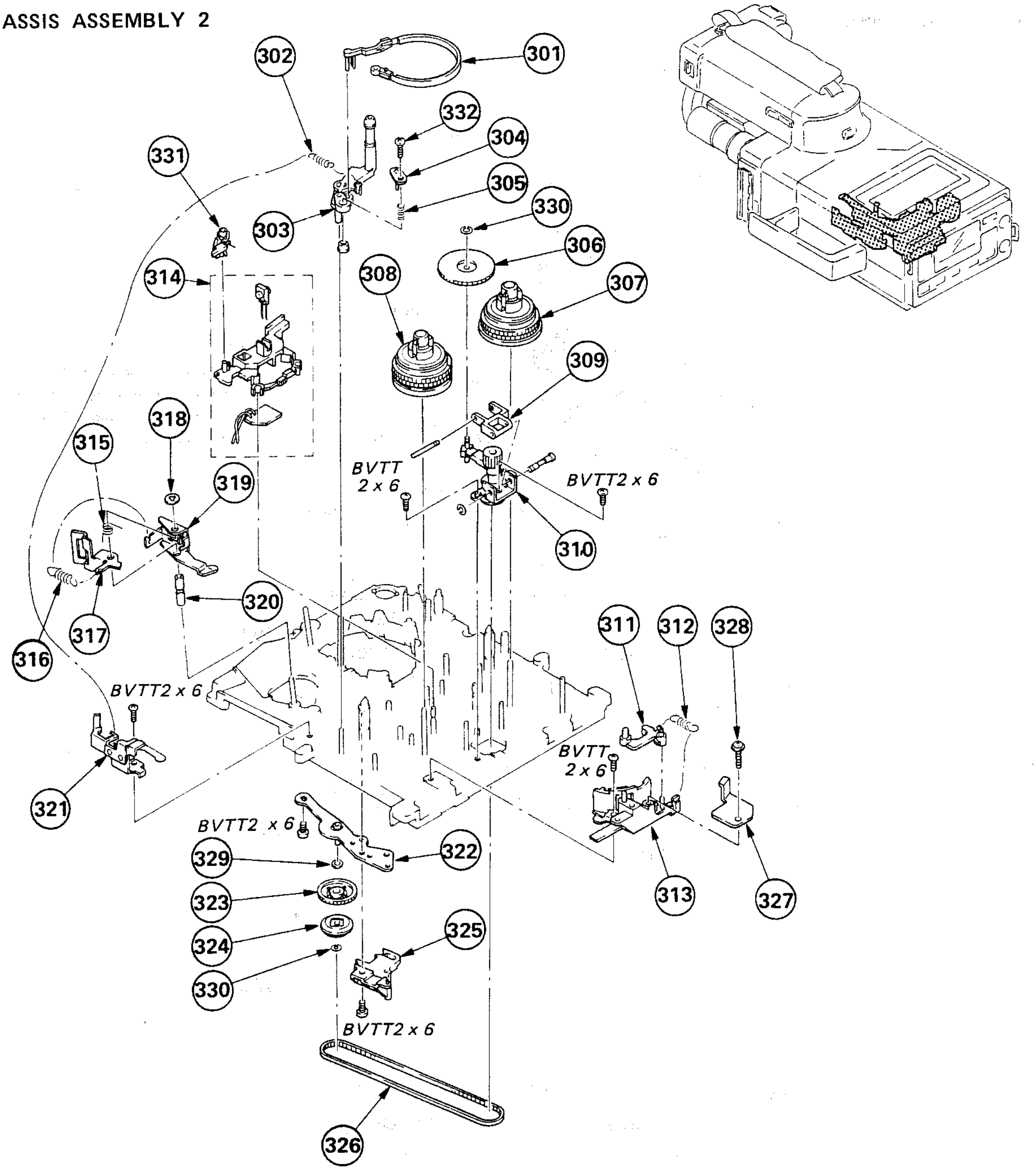

251
P2 x 4
E1.5
P2 x 8
252
253
254
263
268
289
255
256
257
258
291
P2 x 4
264
288
254
259
260
265
E3
262
292
P2 x 4
287
P2 x 3
285
254
281
P2 x 3
268
282
268
261
280
283
266
BVTT2 x 6
284
286
267
BVTT2 x 6
279
268
269
278
P2 x 4
268
268
276
273
268
290
274
270
268
268
271
268
275
272
277
268



The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

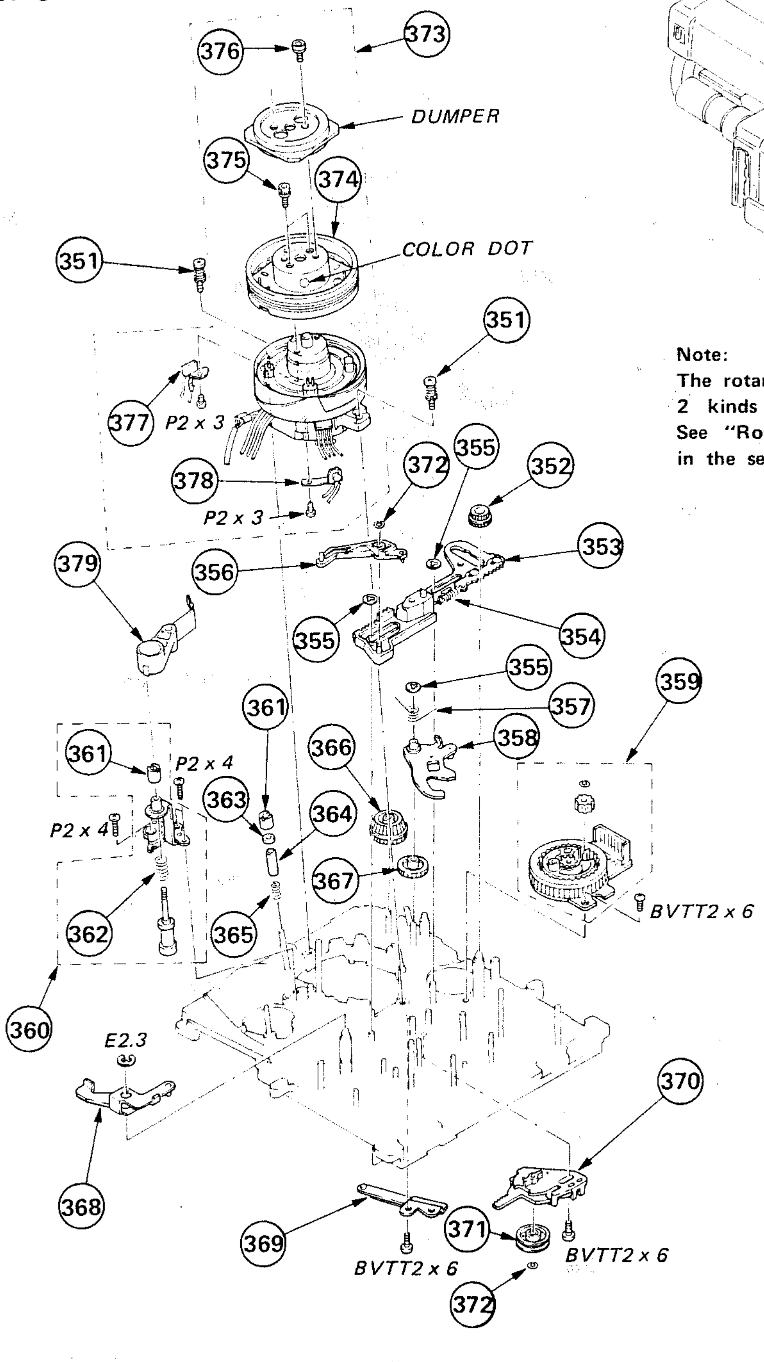
| No. | Part No. | Description | Remark |
|---|---|---|---|
| 251 | X-3686-502-1 | BASE ASSY, GUIDE | |
| 252 | X-3686-577-1 | CHASSIS ASSY, GUIDE, SLANT | |
| 253 | *3-686-503-01 | RETAINER, ROLLER | |
| 254 | 3-697-538-01 | ROLLER, RING | |
| 255 | 3-686-663-01 | WASHER, STOPPER, 2 GANG | |
| 256 | 3-701-436-21 | WASHER, POLYEHTHYLENE | |
| 257 | X-3686-537-1 | ARM ASSY | |
| 258 | 3-686-701-01 | SPRING | |
| 259 | X-3686-535-1 | GEAR ASSY, SECTOR | |
| 260 | 3-686-537-01 | RETAINER, LOCK SLODER | |
| 261 | *A-7040-014-A | SLIDER ASSY, LOCK | 262 |
| 262 | 3-686-887-01 | SPRING, TENSION | |
| 263 | ⚠A-7040-009-A | MOTOR ASSY, L (LOADING) M901 | 264, 265 |
| 264 | *3-686-757-01 | CAP, SHIELD, L MOTOR | |
| 265 | 1-161-073-11 | CAP, CERAMIC 0.033MF C902 | |
| 266 | *3-686-636-01 | ARM, T.S RELEASE | |
| 267 | ⚠1-454-377-11 | SOLENOID, PLUNGER PM901 | |
| 268 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 269 | X-3686-574-1 | BRAKE ASSY, MAIN, TAKE-UP | |
| 270 | *3-686-635-01 | ARM, P | |
| 271 | X-3686-573-1 | BRAKE ASSY, MAIN, SUPPLY | |
| 272 | *3-686-629-01 | SLIDER, SELECTION, UPPER & LOWER | |
| 273 | 3-686-508-01 | GEAR, NO.2 | |
| 274 | 3-686-545-01 | GEAR, NO.3 | |
| 275 | 3-686-544-01 | GEAR, NO.4 | |
| 276 | X-3686-514-1 | GEAR ASSY, NO.1 | |
| 277 | 3-686-546-01 | BELT, L- MOTOR | |
| 278 | 8-838-077-01 | MOTOR, DC (BHF-2800B) (CAPSTAN) M902 | |
| 279 | A-7040-054-A | GUIDE (P) ASSY, ENTRANCE | |
| 280 | 3-686-561-01 | SCREW, DRUM GUARD | |
| 281 | 3-686-724-01 | NUT, GUIDE | |
| 282 | *3-686-894-01 | FLANGE, #3 #4 GUIDE | |
| 283 | 3-686-912-01 | GUIDE, #3 #4 | |
| 284 | 3-669-666-00 | SPRING, COMPRESSION | |
| 285 | *3-686-675-01 | STOPPER, RING | |
| 286 | A-7040-007-A | RING ASSY, LOADING | 287, 291 |
| 287 | X-3686-576-1 | ARM ASSY, PINCH ROLLER | |
| 288 | *3-686-911-01 | PLATE, TOP, ROLLER | |
| 289 | 3-697-518-01 | GEAR, NO.10 | |
| 290 | 3-686-882-01 | SPRING, TENSION | |
| 291 | 3-686-559-01 | WASHER | |
| 292 | 3-691-920-01 | PLATE, SHIELD, L.MOTOR | |

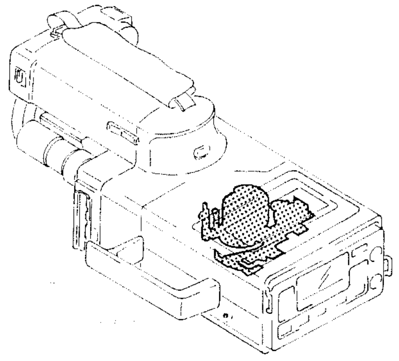
## 5-7. CHASSIS ASSEMBLY 2


301
302
332
304
331
305
330
303
306
314
308
307
309
318
315
BVTT 2 x 6
BVTT2 x 6
319
310
320
317
316
311
312
328
BVTT2 x 6
BVTT 2 x 6
321
BVTT2 x 6
322
329
313
327
323
325
324
330
BVTT2 x 6
326

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 301 | X-3686-531-1 | BAND ASSY, TENSION REGULATOR | |
| 302 | 3-686-918-01 | SPRING, TENSION | |
| 303 | X-3686-532-5 | ARM SUB ASSY, TENSION REGULATOR | |
| 304 | *X-3686-523-1 | PLATE ASSY, TENSION REGULATOR | |
| 305 | 3-669-666-00 | SPRING, COMPRESSION | |
| 306 | X-3686-526-1 | GEAR (B) ASSY, DRIVING | |
| 307 | X-3686-572-2 | TABLE ASST, REEL, TAKE-UP | |
| 308 | X-3686-571-2 | TABLE ASST, REEL, SUPPLY | |
| 309 | *3-686-630-01 | ARM(B), SELECTION, UPPER & LOWER | |
| 310 | X-3686-581-1 | ARM COMPLETE ASSY, DRIVING | |
| 311 | *3-686-637-01 | BRAKE (S), SOFT | |
| 312 | 3-696-082-01 | SPRING, TENSION | |
| 313 | *3-686-760-01 | GUIDE, BAND | |
| 314 | *A-7070-024-A | LD-1 BOARD, COMPLETE | |
| 315 | 3-686-568-01 | SPRING, TORSION | |
| 316 | 3-686-885-01 | SPRING, TENSION | |
| 317 | *3-686-641-01 | ARM, PINCH PRESS | |
| 318 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 319 | *3-686-660-01 | ARM, PINCH LIMITER | |
| 320 | *3-686-567-01 | SLEEVE, PINCH PRESS | |
| 321 | *X-3686-525-1 | HOOK ASSY, SPRING | |
| 322 | *X-3686-529-1 | BASE ASSY, CHANGE GEAR | |
| 323 | X-3686-520-1 | GEAR ASSY, CHANGE | |
| 324 | *3-686-596-01 | FLANGE, GEAR | |
| 325 | *3-686-648-01 | HOLDER, WIRE | |
| 326 | 3-686-646-01 | BELT, TIMIMG | |
| 327 | *3-686-991-01 | STOPPER, REEL TABLE | |
| 328 | 3-669-480-11 | + PTPWH 2 | |
| 329 | 3-701-436-11 | WASHER, 1.6 | |
| 330 | 3-686-559-01 | WASHER | |
| 331 | X-3686-590-1 | BRAKE ASSY, REV | |
| 332 | 3-697-546-01 | SCREW (+-M2X6), SPECIAL | |

## 5-8. CHASSIS ASSEMBLY 3

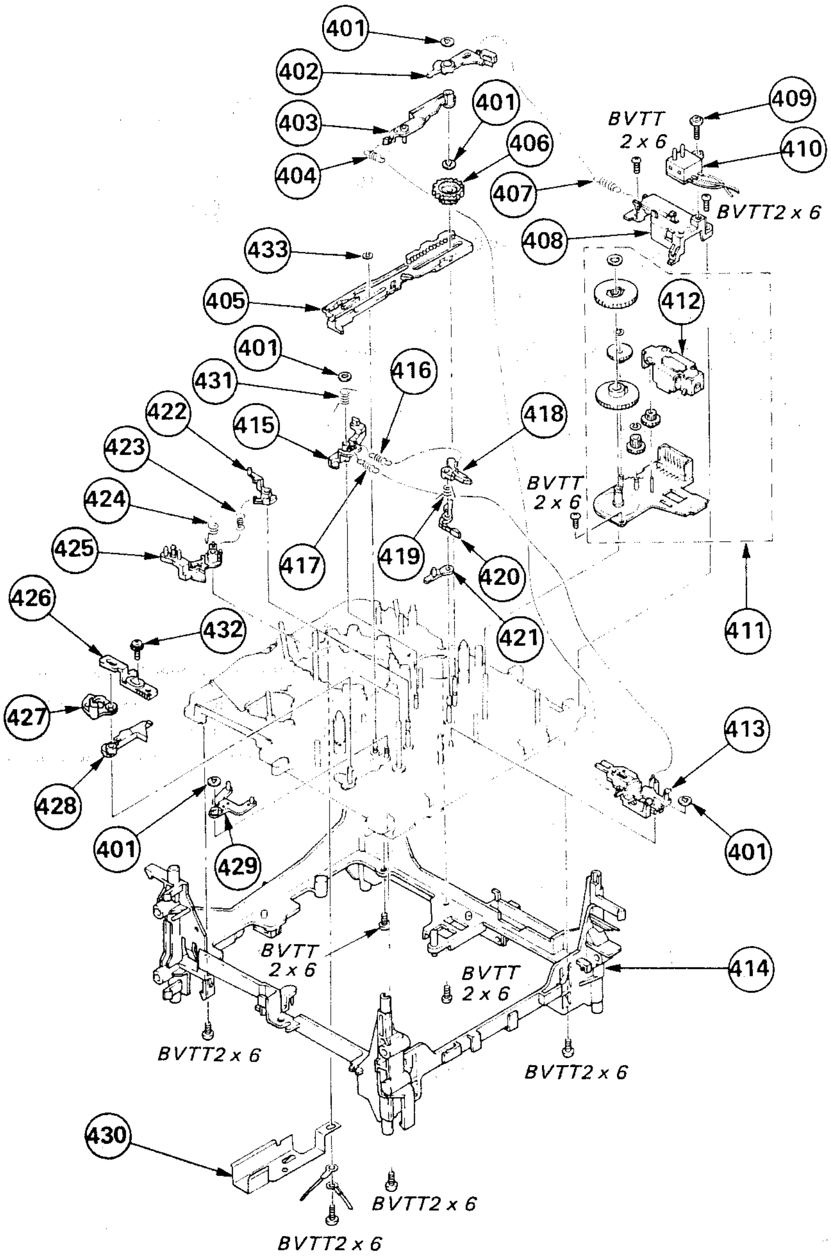

376
373
DUMPER
375
374
351
COLOR DOT
351
377
P2 x 3
378
P2 x 3
372
355
352
353
379
356
355
354
355
357
359
358
361
361
P2 x 4
366
P2 x 4
363
364
367
362
365
BVTT2 x 6
360
E2.3
370
368
369
371
BVTT2 x 6
BVTT2 x 6
372

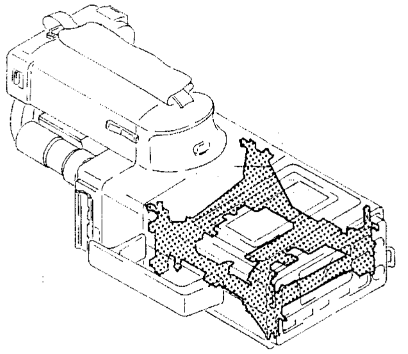


Note:
The rotary upper drum is divided into 2 kinds depending on colour dots. See "Rotary Upper Drum Replacing" in the service manual, when replacing.

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 351 | X-3686-569-1 | SCREW ASSY, FITTING | |
| 352 | 3-686-702-01 | GEAR, DRIVING, GUIDE, SLANT | |
| 353 | *X-3686-548-2 | SLIDER SUB ASSY, L | |
| 354 | 3-686-886-01 | SPRING, TENSION | |
| 355 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 356 | *X-3686-518-1 | ARM ASSY | |
| 357 | 3-686-540-01 | SPRING, TORSION | |
| 358 | X-3686-579-1 | CHANGE ASSY, DRIVE | |
| 359 | X-3686-549-1 | L-SW ASSY | |
| 360 | A-7040-053-A | GUIDE BLOCK COMPLETE ASSY, #5 | 361, 362 |
| 361 | 3-686-724-01 | NUT, GUIDE | |
| 362 | 3-686-889-01 | SPRING, COMPRESSION | |
| 363 | *3-686-894-01 | FLANGE, #3 #4 GUIDE | |
| 364 | 3-686-912-01 | GUIDE, #3 #4 | |
| 365 | 3-669-666-00 | SPRING, COMPRESSION | |
| 366 | 3-686-539-01 | GEAR, NO.9 | |
| 367 | 3-686-535-01 | GEAR, NO.8 | |
| 368 | *X-3686-509-1 | LEVER ASSY, PINCH PRESS | |
| 369 | 1-535-535-11 | TERMINAL, SHAFT GROUND | |
| 370 | X-3686-521-1 | BASE ASSY, IDLER | |
| 371 | X-3686-522-1 | IDLER ASSY | |
| 372 | 3-686-559-01 | WASHER | |
| 373 | A-7048-004-A | DRUM ASSY (DVH-03A-R) | 374-378 |
| 374 | A-7049-005-B | DRUM ASSY, ROTARY UPPER (DVR-03-R)<br>COLOUR DOT: BLUE OR RED | |
| | A-7049-012-A | DRUM ASSY, ROTARY UPPER (DVR-03-R-(O))<br>COLOUR DOT: BLACK OR GREEN | |
| 375 | 3-686-403-01 | SCREW (2X5), BOLT WASHER | |
| 376 | 3-686-422-01 | WASHER (2X2.7), BOLT, HOLE | |
| 377 | 1-806-975-11 | SENSOR, DEW CONDENSATION | |
| 378 | 1-806-911-11 | HEATER | |
| 379 | *3-688-917-01 | STOPPER, TAPE | |

## 5-9. CHASSIS ASSEMBLY 4

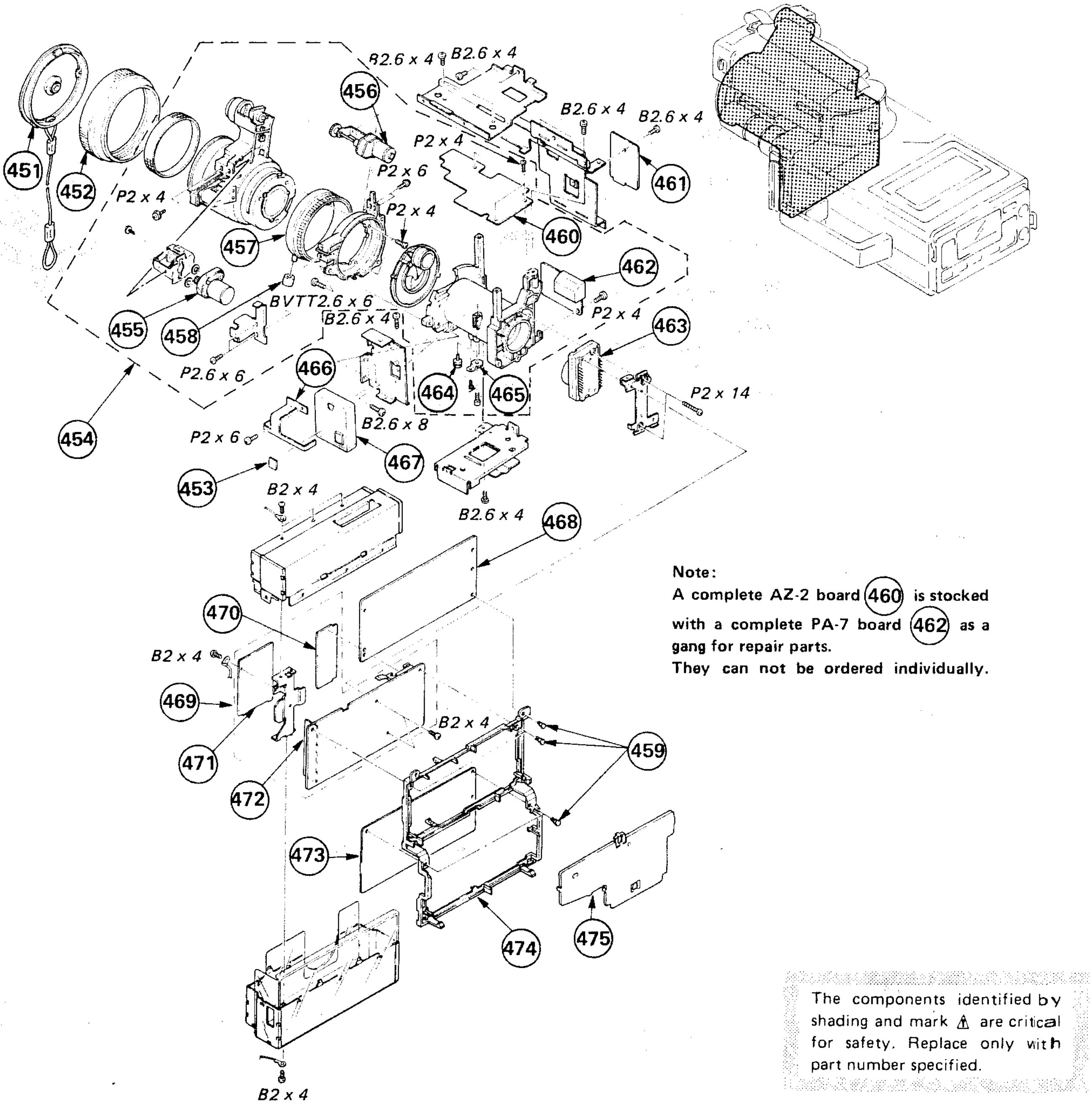

401
402
403
401
404
406
BVTT 2 x 6
409
410
407
BVTT2 x 6
408
433
405
412
401
431
416
422
415
418
423
424
BVTT 2 x 6
425
417
419
420
426
432
421
411
427
413
428
401
429
401
BVTT 2 x 6
BVTT 2 x 6
414
BVTT2 x 6
BVTT2 x 6
430
BVTT2 x 6
BVTT2 x 6



The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 401 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 402 | X-3686-511-1 | BRAKE ASSY, T.S | |
| 403 | *X-3686-528-1 | ARM ASSY, B RELEASE | |
| 404 | 3-686-903-01 | SPRING, TENSION | |
| 405 | *3-686-657-08 | SLIDER, M | |
| 406 | 3-686-909-01 | GEAR, MODE OUTPUT | |
| 407 | 3-686-907-01 | SPRING, TENSION | |
| 408 | *3-686-759-01 | COVER, CONTROL MOTOR | |
| 409 | 3-669-480-11 | + PTPWH 2 | |
| 410 | 1-554-942-11 | SWITCH, PUSH (RECOG) S902 | |
| 411 | A-7040-003-A | M-SW ASSY | 412 |
| 412 | ⚠ 8-835-110-01 | MOTOR, DC (DNR-5301A) (CONTROL) M903 | |
| 413 | *3-686-656-01 | SLIDER, B RELEASE | |
| 414 | X-3686-554-2 | FRAME ASSY, MOLD | |
| 415 | *3-686-634-01 | ARM, RL | |
| 416 | 3-686-906-01 | SPRING, TENSION | |
| 417 | 3-686-904-01 | SPRING, TENSION | |
| 418 | X-3686-510-1 | BRAKE ASSY, REW | |
| 419 | 3-686-617-01 | SPRING | |
| 420 | *3-686-638-01 | ARM, RVS | |
| 421 | *3-686-580-01 | ARM, SET UP | |
| 422 | 3-686-996-01 | BRAKE (S), HARD | |
| 423 | 3-686-905-02 | SPRING, TENSION | |
| 424 | 3-686-603-01 | SPRING | |
| 425 | *3-686-644-01 | ARM, BAND | |
| 426 | *3-686-642-01 | PLATE, ADJUSTMENT, BAND | |
| 427 | *3-686-755-01 | DISK, EJECT | |
| 428 | *3-686-643-01 | ARM, MODE | |
| 429 | *X-3686-530-1 | ARM (A) ASSY, SELECTION | |
| 430 | *3-686-966-01 | PLATE, SHIELD, HEAD LEAD | |
| 431 | 3-686-579-01 | SPRING | |
| 432 | 3-686-528-01 | SCREW (2X6), + | |
| 433 | 3-686-559-01 | WASHER | |

## 5-10. CAMERA BLOCK ASSEMBLY

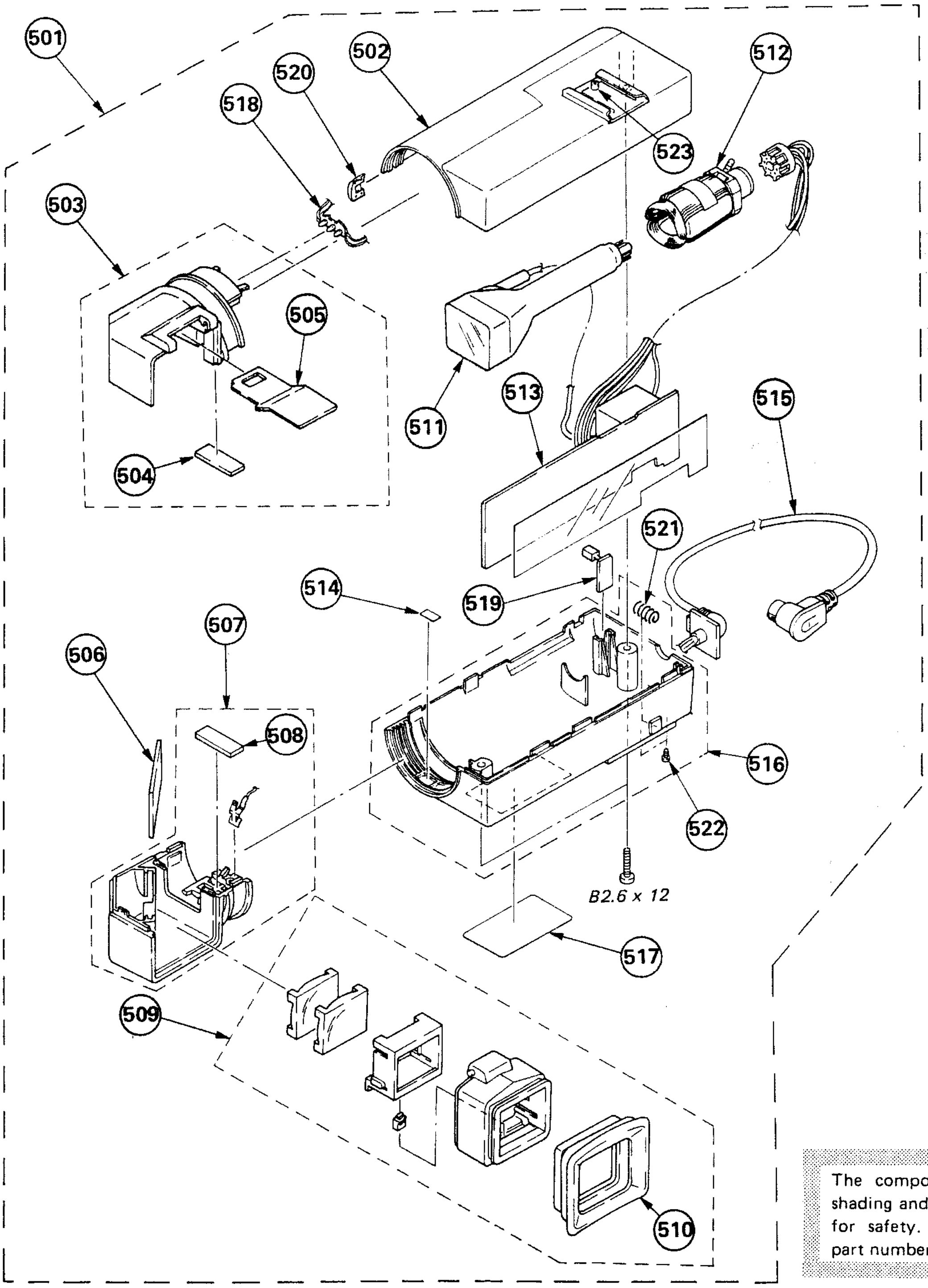

B2.6 x 4
B2.6 x 4
456
B2.6 x 4
B2.6 x 4
P2 x 4
461
P2 x 6
451
452
P2 x 4
P2 x 4
460
457
462
BVTT2.6 x 6
B2.6 x 4
P2 x 4
463
455
458
466
P2.6 x 6
464
465
P2 x 14
B2.6 x 8
454
P2 x 6
467
453
B2 x 4
B2.6 x 4
468
470
B2 x 4
469
B2 x 4
459
471
472
473
474
475
B2 x 4

**Note:**
**A complete AZ-2 board (460) is stocked with a complete PA-7 board (462) as a gang for repair parts.**
**They can not be ordered individually.**

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 451 | *X-3686-677-1 | CAP ASSY, HOOD | |
| 452 | 3-696-004-01 | HOOD | |
| 453 | 9-911-839-XX | STOPPER, HALF | |
| 454 | 1-547-183-11 | LENS, ZOOM (VCL-1206YE) | 455-458<br>460, 462, 464, 465 |
| 455 | ⚠ .8-835-127-01 | F MOTOR (DNR-6300D)(FOCUS) M906 | |
| 456 | ⚠ .3-707-173-01 | MOTOR UNIT, Z (DNR-6302A)(ZOOM) M904 | |
| 457 | 3-707-226-01 | ZOOM RING UNIT | |
| 458 | 3-707-225-01 | CAP, ZOOM LEVER | |
| 459 | 2-279-715-01 | RIVET, NYLON | |
| 460 | *A-7060-204-A | AZ-2 BOARD, COMPLETE | |
| 461 | *A-7060-229-A | ZM-4 BOARD, COMPLETE | |
| 462 | *A-7060-204-A | PA-7 BOARD, COMPLETE | |
| 463 | 8-750-010-23 | CCD IMAGER BLOCK (IU021-K1AA) | |
| 464 | 3-707-164-01 | BRACE, FB ADJUSTMENT | |
| 465 | 3-707-168-01 | BRACKET, ADJUSTMENT, FB | |
| 466 | 3-696-066-01 | SPRING | |
| 467 | ⚠ .1-464-377-21 | CONVERTER, DC-DC (CAMERA) DR902 | |
| 468 | *A-7060-174-A | ME-2 BOARD, COMPLETE | |
| 469 | *A-7060-171-A | CP-11 BOARD, COMPLETE | 470, 472 |
| 470 | *A-7050-173-A | OS-2 BOARD, COMPLETE | |
| 471 | *A-7050-172-A | DR-30 BOARD, COMPLETE | |
| 472 | *A-7070-128-A | VR-9 BOARD, COMPLETE | |
| 473 | *A-7060-247-A | AW-2 BOARD, COMPLETE | |
| 474 | *3-686-850-01 | FRAME, CAMERA | |
| 475 | *X-3686-597-1 | CASE ASSY, SHIELD, CP | |

## 5-11. EVF (VF-206) (AEP, W.G MODEL) ASSEMBLY
## EVF (VF-208) (UK MODEL) ASSEMBLY



The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 501 | A-7019-007-A | EVF (VF-206) (AEP,W.G MODEL) | 502-523 |
| | A-7019-011-A | EVF (VF-208) (UK MODEL) | 502-523 |
| 502 | X-3686-610-1 | CABINET (UPPER) ASSY, EVF | 523 |
| 503 | X-3686-706-1 | CABINET (UPPER) ASSY, CR | 504, 505 |
| 504 | 9-911-840-XX | CUSHION, CRT | |
| 505 | 3-688-956-01 | SPRING | |
| 506 | 3-688-959-01 | MIRROR | |
| 507 | X-3686-612-1 | CABINET (LOWER) ASSY, CR | 508 |
| 508 | 9-911-840-XX | CUSHION, CRT | |
| 509 | X-3686-567-3 | TABLE ASSY, LENS | 510 |
| 510 | 3-696-016-01 | EYE CAP | |
| 511 | ⚠ 1-546-051-11 | CATHODE-RAY TUBE, B/W (C1M30P4) V901 | |
| 512 | ⚠ 1-451-251-21 | DEFLECTION YOKE (MONOCHROME) L901 | |
| 513 | *A-7060-103-A | VF-4 BOARD, COMPLETE | |
| 514 | 3-696-021-01 | SPRING | |
| 515 | 1-556-824-31 | CORD, CONNECTION (WITH PLUG) 8P | |
| 516 | X-3686-662-1 | CABINET (LOWER) ASSY, EVF | 521, 523 |
| 517 | *3-688-962-01 | LABEL, MODEL NUMBER, EVF (AEP,W.G MODEL) | |
| | *3-693-251-01 | LABEL, MODEL NUMBER, EVF (UK MODEL) | |
| 518 | *1-614-872-11 | TL-16 BOARD | |
| 519 | *1-614-871-11 | TL-15 BOARD | |
| 520 | 3-688-978-01 | PLATE, ORNAMENTAL | |
| 521 | 3-565-923-00 | SPRING, COMPRESSION | |
| 522 | 3-693-247-01 | SCREW (M2) (C LOCK), +K | |
| 523 | 3-678-103-11 | SCREW, EVF STOPPER | |

## 5-12. HARDWARE LIST

### SCREW

| | |
|---|---|
| 3-693-247-01 | SCREW +K 2X4 |
| 7-621-255-20 | SCREW +P 2X4 |
| 7-621-255-45 | SCREW +P 2X6 |
| 7-621-255-50 | SCREW +P 2X8 |
| 7-621-255-75 | SCREW +P 2X12 |
| 7-621-255-85 | SCREW +P 2X14 |
| 7-621-772-08 | SCREW +B 2X3 |
| 7-621-772-18 | SCREW +B 2X4 |
| 7-621-772-30 | SCREW +B 2X6 |
| 7-621-772-38 | SCREW +B 2X6 |
| 7-621-772-50 | SCREW +B 2X10 |
| 7-621-772-58 | SCREW +B 2X10 |
| 7-621-773-86 | SCREW +B 2.6X4 |
| 7-621-773-95 | SCREW +B 2.6X6 |
| 7-621-775-10 | SCREW +B 2.6X4 |
| 7-685-107-11 | SCREW +P 2X12 TYPE2 NON-SLIT |
| 7-685-134-19 | SCREW +BTP 2.6X8 TYPE2 N-S |
| 7-685-535-14 | SCREW +BTP 2.6X10 TYPE2 N-S |
| 7-685-536-19 | SCREW +BTP 2.6X12 TYPE2 N-S |
| 7-685-780-01 | SCREW +PTT 2X3 (S) |
| 7-685-853-01 | SCREW +BVTT 2X6 (S) |

### LUG

| | |
|---|---|
| 7-623-505-01 | LUG, 2 |

### STOP RING

| | |
|---|---|
| 7-624-101-01 | STOP RING 1.2 (E TYPE) |
| 7-624-102-04 | STOP RING 1.5, TYPE -E |
| 7-624-105-04 | STOP RING 2.3, TYPE -E |
| 7-624-106-04 | STOP RING 3.0, TYPE -E |

### PRECISION SCREW

| | |
|---|---|
| 7-627-551-58 | SCREW, PRECISION +P 1.4X3 |
| 7-627-553-48 | SCREW, PRECISION +P 2X4 |
| 7-627-850-18 | SCREW, PRECISION +P 1.4X2.5 |

### WASHER

| | |
|---|---|
| 7-688-002-11 | W 2.6, MIDDLE |

# SECTION 6
# ELECTRICAL PARTS LIST

**NOTE:**

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

| Ref No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | *A-7060-247-A | AW-2 BOARD, COMPLETE<br>******************** | | | |
| | | CAPACITOR | | | |
| C702 | 1-123-661-00 | ELECT | 100MF | 20% | 6.3V |
| C703 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C704 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C705 | 1-123-608-00 | ELECT | 0.22MF | 20% | 50V |
| C706 | 1-131-378-00 | TANTALUM | 15MF | 10% | 10V |
| C717 | 1-131-408-00 | TANTALUM | 1MF | 20% | 25V |
| C719 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C720 | 1-123-611-00 | ELECT | 1MF | 20% | 50V |
| C721 | 1-123-661-00 | ELECT | 100MF | 20% | 6.3V |
| C722 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C723 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C724 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C725 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C726 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C727 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C728 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C729 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C730 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C732 | 1-163-129-00 | CERAMIC CHIP | 330PF | 5% | 50V |
| C733 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C734 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C735 | 1-131-374-00 | TANTALUM | 33MF | 20% | 16V |
| C742 | 1-124-270-11 | ELECT | 0.47MF | 20% | 50V |
| C743 | 1-124-270-11 | ELECT | 0.47MF | 20% | 50V |
| C744 | 1-135-096-21 | TANTAL. CHIP | 4.7MF | 20% | 10V |
| C746 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C747 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C748 | 1-135-096-21 | TANTAL. CHIP | 4.7MF | 20% | 10V |
| C749 | 1-124-275-00 | ELECT | 2.2MF | 20% | 35V |
| C750 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C751 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C752 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C753 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C755 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C756 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C757 | 1-123-661-00 | ELECT | 100MF | 20% | 6.3V |
| C758 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C759 | 1-124-236-00 | ELECT | 47MF | 20% | 16V |
| C760 | 1-124-236-00 | ELECT | 47MF | 20% | 16V |
| C761 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C762 | 1-124-234-00 | ELECT | 22MF | 20% | 16V |
| C763 | 1-124-234-00 | ELECT | 22MF | 20% | 16V |
| C764 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C765 | 1-123-620-00 | ELECT | 10MF | 20% | 35V |
| C766 | 1-123-620-00 | ELECT | 10MF | 20% | 35V |
| C767 | 1-124-229-00 | ELECT | 33MF | 20% | 6.3V |
| C768 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C769 | 1-135-096-21 | TANTAL. CHIP | 4.7MF | 20% | 10V |

| Ref No. | Part No. | Description | Remark |
|---|---|---|---|
| | | CONNECTOR | |
| CN701 | *1-564-018-11 | PIN, CONNECTOR 8P | |
| CN702 | *1-564-016-00 | PIN, CONNECTOR 6P | |
| CN703 | *1-564-014-00 | PIN, CONNECTOR 4P | |
| | | DIODE | |
| D702 | 8-719-100-05 | DIODE 1S2837 | |
| D706 | 8-719-100-05 | DIODE 1S2837 | |
| D708 | 8-719-100-05 | DIODE 1S2837 | |
| D709 | 8-719-100-05 | DIODE 1S2837 | |
| D710 | 8-719-100-03 | DIODE 1S2835 | |
| D711 | 8-719-100-05 | DIODE 1S2837 | |
| D715 | 8-719-101-23 | DIODE 1SS123 | |
| D716 | 8-719-100-05 | DIODE 1S2837 | |
| D717 | 8-719-100-05 | DIODE 1S2837 | |
| | | IC | |
| IC701 | 8-759-201-00 | IC TC4052BF | |
| IC703 | 8-759-103-03 | IC UPD6107G | |
| IC705 | 8-759-100-94 | IC UPC358G2 | |
| IC706 | 8-759-908-12 | IC CX20056 | |
| | | COIL | |
| L708 | 1-410-124-11 | COIL, CHOKE 47UH | |
| L709 | 1-410-124-11 | COIL, CHOKE 47UH | |
| L710 | 1-408-970-21 | MICRO INDUCTOR 10UH | |
| L711 | 1-408-970-21 | MICRO INDUCTOR 10UH | |
| | | TRANSISTOR | |
| Q704 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q707 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q708 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q709 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q710 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q711 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q712 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q713 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q714 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q715 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q716 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q717 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q718 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q721 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q722 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q723 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q724 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q725 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q726 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q728 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q729 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q730 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q732 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q733 | 8-729-100-76 | TRANSISTOR 2SA812 | |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q734 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R704 | 1-216-091-00 | METAL CHIP 56K 5% 1/10W | |
| R705 | 1-216-091-00 | METAL CHIP 56K 5% 1/10W | |
| R707 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R708 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R709 | 1-216-035-00 | METAL CHIP 270 5% 1/10W | |
| R712 | 1-216-107-00 | METAL CHIP 270K 5% 1/10W | |
| R714 | 1-216-035-00 | METAL CHIP 270 5% 1/10W | |
| R715 | 1-216-021-00 | METAL CHIP 68 5% 1/10W | |
| R716 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |
| R717 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R718 | 1-216-067-00 | METAL CHIP 5.6K 5% 1/10W | |
| R719 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R722 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R723 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R724 | 1-216-075-00 | METAL CHIP 12K 5% 1/10W | |
| R725 | 1-216-061-00 | METAL CHIP 3.3K 5% 1/10W | |
| R726 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R727 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R728 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R729 | 1-216-063-00 | METAL CHIP 3.9K 5% 1/10W | |
| R730 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R731 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R732 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R733 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R734 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R735 | 1-216-071-00 | METAL CHIP 8.2K 5% 1/10W | |
| R736 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R737 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R738 | 1-216-087-00 | METAL CHIP 39K 5% 1/10W | |
| R739 | 1-216-087-00 | METAL CHIP 39K 5% 1/10W | |
| R740 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R741 | 1-216-079-00 | METAL CHIP 18K 5% 1/10W | |
| R742 | 1-216-059-00 | METAL CHIP 2.7K 5% 1/10W | |
| R743 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |
| R744 | 1-216-071-00 | METAL CHIP 8.2K 5% 1/10W | |
| R745 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R746 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R747 | 1-216-099-00 | METAL CHIP 120K 5% 1/10W | |
| R748 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R749 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R750 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R751 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R753 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R755 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R756 | 1-216-075-00 | METAL CHIP 12K 5% 1/10W | |
| R757 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R759 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R760 | 1-216-105-00 | METAL CHIP 220K 5% 1/10W | |
| R761 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R762 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R763 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R764 | 1-216-101-00 | METAL CHIP 150K 5% 1/10W | |
| R765 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R766 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R767 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R768 | 1-216-091-00 | METAL CHIP 56K 5% 1/10W | |
| R769 | 1-216-105-00 | METAL CHIP 220K 5% 1/10W | |
| R771 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R772 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R775 ⚠ | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R778 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R780 | 1-216-125-00 | METAL CHIP 1.5M 5% 1/10W | |
| R781 | 1-216-107-00 | METAL CHIP 270K 5% 1/10W | |
| R784 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R785 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R786 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R787 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R788 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R794 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R795 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV701 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV702 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV703 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV704 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV706 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV707 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV708 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV709 | 1-228-827-21 | RES, ADJ, METAL GLAZE 2.2K | |
| RV710 | 1-228-828-21 | RES, ADJ, METAL GLAZE 4.7K | |
| RV711 | 1-228-877-00 | RES, ADJ, METAL GLAZE 100K | |

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*A-7060-171-A CP-11 BOARD, COMPLETE
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IC701 or IC706 is not mounted on the mounted CP-11 Board. Each of these ICs cannot be a repair-replacement part, but becomes a CCD imager block.

CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C702 | 1-163-109-00 | CERAMIC CHIP 47MF 5% 50V | |
| C703 | 1-163-077-00 | CERAMIC CHIP 0.1MF 50V | |
| C704 | 1-163-117-00 | CERAMIC CHIP 100PF 5% 50V | |
| C705 | 1-124-229-00 | ELECT 33MF 20% 10V | |
| C706 | 1-135-092-21 | TANTAL.CHIP 3.3MF 20% 16V | |
| C707 | 1-163-141-00 | CERAMIC CHIP 0.001MF 5% 50V | |
| C708 | 1-163-077-00 | CERAMIC CHIP 0.1MF 50V | |
| C709 | 1-135-096-21 | TANTAL.CHIP 4.7MF 20% 10V | |
| C722 | 1-163-117-00 | CERAMIC CHIP 100PF 5% 50V | |
| C723 | 1-163-117-00 | CERAMIC CHIP 100PF 5% 50V | |
| C724 | 1-135-091-00 | TANTAL.CHIP 1MF 20% 16V | |
| C725 | 1-135-091-00 | TANTAL.CHIP 1MF 20% 16V | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C726 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C727 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C728 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C729 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C730 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C731 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C732 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C733 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C734 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C735 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C736 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C737 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C738 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C739 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C740 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C741 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C742 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C743 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C744 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C745 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C748 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 20% | 10V |
| C749 | 1-163-100-00 | CERAMIC CHIP 20PF | 5% | 50V |
| C750 | 1-124-229-00 | ELECT 33MF | 20% | 10V |
| C751 | 1-163-100-00 | CERAMIC CHIP 20PF | 5% | 50V |
| C752 | 1-123-645-00 | ELECT 33MF | 20% | 10V |
| C753 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C754 | 1-163-100-00 | CERAMIC CHIP 20PF | 5% | 50V |
| C755 | 1-123-645-00 | ELECT 33MF | 20% | 10V |
| C756 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 20% | 10V |
| C757 | 1-124-234-00 | ELECT 22MF | 20% | 16V |
| C758 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C759 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C760 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C761 | 1-135-091-00 | TANTAL. CHIP 1MF | 20% | 16V |
| C762 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C763 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C764 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C765 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C766 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C769 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C770 | 1-135-091-00 | TANTAL. CHIP 1MF | 20% | 16V |
| C771 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C782 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C783 | 1-135-083-00 | TANTAL. CHIP 0.47MF | 20% | 25V |
| C784 | 1-163-101-00 | CERAMIC CHIP 22PF | 5% | 50V |
| C785 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V |
| C786 | 1-135-092-21 | TANTAL. CHIP 3.3MF | 20% | 16V |
| C798 | 1-163-205-00 | CERAMIC CHIP 0.001MF | 5% | 50V |
| C803 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C804 | 1-163-105-00 | CERAMIC CHIP 33PF | 5% | 50V |
| C806 | 1-163-033-00 | CERAMIC CHIP 0.022MF | 10% | 25V |
| C821 | 1-163-127-00 | CERAMIC CHIP 270PF | 5% | 50V |
| C823 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C824 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C825 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C826 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |

CONNECTOR

| | | |
|---|---|---|
| CN008 | 1-564-549-11 | PIN, BOARD TO BOARD(L TYPE)10P |
| CN014 | 1-564-549-11 | PIN, BOARD TO BOARD(L TYPE)10P |

DIODE

| | | |
|---|---|---|
| D706 | 8-719-100-05 | DIODE 1S2837 |
| D707 | 8-719-100-05 | DIODE 1S2837 |
| D708 | 8-719-100-05 | DIODE 1S2837 |
| D711 | 8-719-100-03 | DIODE 1S2835 |
| D712 | 8-719-100-05 | DIODE 1S2837 |
| D713 | 8-719-100-05 | DIODE 1S2837 |
| D716 | 8-719-100-03 | DIODE 1S2835 |

IC

| | | |
|---|---|---|
| IC701 | 8-750-010-23 | CCD IMAGER BLOCK (IU021-K1AA) |
| IC705 | 8-759-000-26 | IC MMH0026CP1 |
| IC706 | 8-750-010-23 | CCD IMAGER BLOCK (IU021-K1AA) |
| IC707 | 8-759-922-28 | IC CX23047B |
| IC708 | 8-757-930-02 | IC CX7930-1 |
| IC709 | 8-759-908-09 | IC CX20053 |

COIL

| | | |
|---|---|---|
| L701 | 1-408-960-21 | MICRO INDUCTOR 1.5UH |
| L702 | 1-543-256-11 | BEAD, FERRITE |
| L703 | 1-543-256-11 | BEAD, FERRITE |

TRANSISTOR

| | | |
|---|---|---|
| Q701 | 8-729-100-76 | TRANSISTOR 2SA812 |
| Q703 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q704 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q705 | 8-729-900-53 | TRANSISTOR DTC114EK |
| Q706 | 8-729-900-53 | TRANSISTOR DTC114EK |
| Q707 | 8-729-900-53 | TRANSISTOR DTC114EK |
| Q708 | 8-729-109-44 | TRANSISTOR 2SK94 |
| Q709 | 8-729-109-44 | TRANSISTOR 2SK94 |
| Q710 | 8-729-109-44 | TRANSISTOR 2SK94 |
| Q714 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q715 | 8-729-100-76 | TRANSISTOR 2SA812 |
| Q716 | 8-729-122-63 | TRANSISTOR 2SA1226 |
| Q717 | 8-729-102-08 | TRANSISTOR 2SC2223-F14 |

RESISTOR

| | | | | | |
|---|---|---|---|---|---|
| R702 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R703 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R704 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R705 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R706 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R708 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R709 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R710 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R713 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R714 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R715 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R716 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R717 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R718 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R728 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R729 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R730 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R731 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R732 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R733 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R734 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R735 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R736 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R737 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R738 | 1-216-009-00 | METAL CHIP | 22 | 5% | 1/10W | |
| R739 | 1-216-009-00 | METAL CHIP | 22 | 5% | 1/10W | |
| R740 | 1-216-013-00 | METAL CHIP | 33 | 5% | 1/10W | |
| R741 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R742 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R743 | 1-216-066-00 | METAL CHIP | 5.1K | 5% | 1/10W | |
| R744 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R745 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R746 | 1-216-087-00 | METAL CHIP | 39K | 5% | 1/10W | |
| R747 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W | |
| R749 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R751 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R752 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R753 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R754 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R755 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R758 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R759 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R760 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R761 | 1-216-066-00 | METAL CHIP | 5.1K | 5% | 1/10W | |
| R762 | 1-216-088-00 | METAL CHIP | 43K | 5% | 1/10W | |
| R764 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R766 | 1-216-066-00 | METAL CHIP | 5.1K | 5% | 1/10W | |
| R767 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R769 | 1-216-066-00 | METAL CHIP | 5.1K | 5% | 1/10W | |
| R770 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R771 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R772 | 1-216-088-00 | METAL CHIP | 43K | 5% | 1/10W | |
| R773 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R774 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R775 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R777 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R782 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R783 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R784 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R785 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R799 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R800 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R822 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R823 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R826 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R830 | 1-216-095-00 | METAL CHIP | 82K | 5% | 1/10W | |
| R832 ⚠ | 1-216-025-91 | METAL CHIP | 100 | 5% | 1/10W | |
| R834 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R835 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R836 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |

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|---|---|---|
| | *A-7050-172-A | DR-30 BOARD, COMPLETE<br>********************* |
| | *3-686-930-01 | HEAT SINK |
| | 7-621-772-18 | SCREW +B 2X4 |

### CAPACITOR

| Ref.No | Part No. | Description | | | |
|---|---|---|---|---|---|
| C711 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C712 | 1-135-076-21 | TANTAL. CHIP | 1MF | 20% | 35V |
| C713 | 1-135-092-21 | TANTAL. CHIP | 3.3MF | 20% | 16V |
| C714 | 1-135-092-21 | TANTAL. CHIP | 3.3MF | 20% | 16V |
| C715 | 1-123-613-00 | ELECT | 3.3MF | 20% | 50V |
| C716 | 1-123-613-00 | ELECT | 3.3MF | 20% | 50V |
| C717 | 1-135-092-21 | TANTAL. CHIP | 3.3MF | 20% | 16V |
| C718 | 1-135-083-00 | TANTAL. CHIP | 0.47MF | 20% | 25V |
| C719 | 1-135-083-00 | TANTAL. CHIP | 0.47MF | 20% | 25V |
| C720 | 1-135-083-00 | TANTAL. CHIP | 0.47MF | 20% | 25V |
| C721 | 1-135-083-00 | TANTAL. CHIP | 0.47MF | 20% | 25V |
| C781 | 1-135-091-00 | TANTAL. CHIP | 1MF | 20% | 16V |
| C787 | 1-135-083-00 | TANTAL. CHIP | 0.47MF | 20% | 25V |
| C788 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C789 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C800 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C801 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C802 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |

### DIODE

| Ref.No | Part No. | Description |
|---|---|---|
| D701 | 8-719-100-03 | DIODE 1S2835 |
| D702 | 8-719-101-23 | DIODE 1SS123 |
| D703 | 8-719-951-12 | DIODE HZ5BLL |
| D704 | 8-719-100-03 | DIODE 1S2835 |
| D705 | 8-719-100-03 | DIODE 1S2835 |
| D714 | 8-719-100-03 | DIODE 1S2835 |
| D715 | 8-719-100-03 | DIODE 1S2835 |

### IC

| Ref.No | Part No. | Description |
|---|---|---|
| IC702 | 8-759-953-61 | IC SN75361AP |
| IC703 | 8-759-953-61 | IC SN75361AP |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | TRANSISTOR | |
| Q702 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q718 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q719 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q720 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q721 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q722 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q726 ⚠ | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q727 ⚠ | 8-729-901-03 | TRANSISTOR DTC144WK | |
| | | RESISTOR | |
| R711 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R712 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R719 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R720 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R721 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R722 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R723 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R802 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R803 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R804 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |
| R805 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R807 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R820 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R821 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R828 ⚠ | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R829 ⚠ | 1-216-075-00 | METAL CHIP 12K 5% 1/10W | |

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*A-7050-173-A OS-2 BOARD, COMPLETE
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| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | CAPACITOR | |
| C710 | 1-135-096-21 | TANTAL. CHIP 4.7MF 20% 10V | |
| C772 | 1-163-077-00 | CERAMIC CHIP 0.1MF 50V | |
| C773 | 1-135-095-00 | TANTAL. CHIP 1.5MF 20% 10V | |
| C774 | 1-163-141-00 | CERAMIC CHIP 0.001MF 5% 50V | |
| C775 | 1-163-221-00 | CERAMIC CHIP 4PF 0.25PF 50V | |
| C776 | 1-163-258-91 | CERAMIC CHIP 200PF 5% 50V | |
| C777 | 1-163-119-00 | CERAMIC CHIP 120PF 5% 50V | |
| C779 | 1-163-261-11 | CERAMIC CHIP 270PF 5% 50V | |
| C780 | 1-163-141-00 | CERAMIC CHIP 0.001MF 5% 50V | |
| | | DIODE | |
| D710 | 8-713-220-00 | DIODE 1T32-2 | |
| D717 | 8-719-101-23 | DIODE 1SS123 | |
| | | TRANSISTOR | |
| Q711 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q712 | 8-729-162-13 | TRANSISTOR 2SC1621 | |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | RESISTOR | |
| R786 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R787 | 1-216-105-00 | METAL CHIP 220K 5% 1/10W | |
| R788 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R789 | 1-216-061-00 | METAL CHIP 3.3K 5% 1/10W | |
| R790 | 1-216-105-00 | METAL CHIP 220K 5% 1/10W | |
| R791 | 1-216-105-00 | METAL CHIP 220K 5% 1/10W | |
| R792 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R795 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R798 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| | | CRYSTAL | |
| X701 | 1-567-343-11 | OSCILLATOR, CRYSTAL (28.4MHZ) | |
| X702 | 1-567-344-21 | VIBRATOR, CRYSTAL (VCO) (17.7MHZ) | |

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*A-7070-128-A VR-9 BOARD, COMPLETE
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| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | CAPACITOR | |
| C746 | 1-124-229-00 | ELECT 33MF 20% 10V | |
| C747 | 1-124-229-00 | ELECT 33MF 20% 10V | |
| | | DIODE | |
| D709 | 8-719-100-05 | DIODE 1S2837 | |
| | | RESISTOR | |
| R748 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R750 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| | | VARIABLE RESISTOR | |
| RV701 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV702 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV703 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV704 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV705 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV706 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV707 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV708 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |

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*A-7060-174-A ME-2 BOARD, COMPLETE
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| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | CAPACITOR | |
| C701 | 1-135-091-00 | TANTAL. CHIP 1MF 20% 16V | |
| C702 | 1-163-077-00 | CERAMIC CHIP 0.1MF 50V | |
| C703 | 1-135-092-21 | TANTAL. CHIP 3.3MF 20% 16V | |
| C704 | 1-124-234-00 | ELECT 22MF 20% 16V | |
| C705 | 1-135-096-21 | TANTAL. CHIP 4.7MF 20% 10V | |
| C706 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% 50V | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C707 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C708 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C709 | 1-135-095-00 | TANTAL. CHIP 1.5MF | 20% | 10V |
| C710 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 20% | 10V |
| C711 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C712 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C713 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C714 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C715 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C716 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 20% | 10V |
| C717 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C718 | 1-131-374-00 | TANTALUM 33MF | 20% | 16V |
| C719 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V |
| C720 | 1-163-121-00 | CERAMIC CHIP 150PF | 5% | 50V |
| C721 | 1-163-107-00 | CERAMIC CHIP 39PF | 5% | 50V |
| C722 | 1-131-374-00 | TANTALUM 33MF | 20% | 16V |
| C723 | 1-163-119-00 | CERAMIC CHIP 120PF | 5% | 50V |
| C724 | 1-163-118-00 | CERAMIC CHIP 110PF | 5% | 50V |
| C725 | 1-163-122-00 | CERAMIC CHIP 160PF | 5% | 50V |
| C726 | 1-163-112-00 | CERAMIC CHIP 62PF | 5% | 50V |
| C727 | 1-163-119-00 | CERAMIC CHIP 120PF | 5% | 50V |
| C728 | 1-163-118-00 | CERAMIC CHIP 110PF | 5% | 50V |
| C729 | 1-163-122-00 | CERAMIC CHIP 160PF | 5% | 50V |
| C730 | 1-163-112-00 | CERAMIC CHIP 62PF | 5% | 50V |
| C731 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C732 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C733 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C734 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C735 | 1-123-616-00 | ELECT 4.7MF | 20% | 16V |
| C736 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C737 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C739 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C740 | 1-163-013-00 | CERAMIC CHIP 0.0022MF | 10% | 50V |
| C741 | 1-124-225-00 | ELECT 100MF | 20% | 6.3V |
| C742 | 1-124-225-00 | ELECT 100MF | 20% | 6.3V |
| C743 | 1-123-245-00 | ELECT 4.7MF | 20% | 16V |
| C744 | 1-123-645-00 | ELECT 33MF | 20% | 10V |
| C745 | 1-124-287-00 | ELECT 10MF | 20% | 10V |
| C746 | 1-124-287-00 | ELECT 10MF | 20% | 10V |
| C747 | 1-123-245-00 | ELECT 4.7MF | 20% | 16V |
| C748 | 1-163-121-00 | CERAMIC CHIP 150PF | 5% | 50V |
| C749 | 1-124-255-00 | ELECT 1MF | 20% | 50V |
| C750 | 1-124-255-00 | ELECT 1MF | 20% | 50V |
| C751 | 1-123-611-00 | ELECT 1MF | 20% | 50V |
| C754 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C755 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C756 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C757 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C758 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C759 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C760 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C761 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C762 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C763 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C764 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C767 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C768 | 1-163-113-00 | CERAMIC CHIP 68PF | 5% | 50V |
| C769 | 1-135-091-00 | TANTAL. CHIP 1MF | 20% | 16V |
| C770 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |

### CONNECTOR

| | | |
|---|---|---|
| CN704 | *1-564-017-00 | PIN, CONNECTOR 7P |
| CN705 | *1-564-018-11 | PIN, CONNECTOR 8P |

### DIODE

| | | |
|---|---|---|
| D701 | 8-719-100-05 | DIODE 1S2837 |
| D703 | 8-719-100-05 | DIODE 1S2837 |

### DELAY LINE

| | | |
|---|---|---|
| DL701 | 1-415-238-00 | DELAY LINE |

### FILTER

| | | |
|---|---|---|
| FL701 | 1-235-442-11 | FILTER, LOW PASS (YH) |
| FL702 | 1-235-439-11 | FILTER, BAND PASS (4.43MHZ) |

### IC

| | | |
|---|---|---|
| IC701 | 8-752-303-90 | IC CX23039 |
| IC702 | 8-752-015-10 | IC CX20151 |
| IC703 | 8-759-908-11 | IC CX20055 |
| IC704 | 8-759-908-15 | IC TL431CLP |

### COIL

| | | |
|---|---|---|
| L701 | 1-408-960-21 | MICRO INDUCTOR 1.5UH |
| L702 | 1-408-960-21 | MICRO INDUCTOR 1.5UH |

### TRANSISTOR

| | | |
|---|---|---|
| Q701 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q702 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q703 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q704 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q705 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q706 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q707 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q708 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q709 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q710 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q711 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q712 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q713 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q715 | 8-729-901-03 | TRANSISTOR DTC144WK |
| Q716 | 8-729-901-03 | TRANSISTOR DTC144WK |
| Q717 | 8-729-901-03 | TRANSISTOR DTC144WK |
| Q718 | 8-729-900-99 | TRANSISTOR DTA144WK |
| Q719 | 8-729-901-03 | TRANSISTOR DTC144WK |
| Q720 | ⚠8-729-901-04 | TRANSISTOR DTA114EK |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| Q721 ⚠ | 8-729-901-03 | TRANSISTOR DTC144WK | | | | |
| Q722 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |

### RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R701 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R703 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R704 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R706 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R707 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R708 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R709 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R710 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R711 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R712 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R713 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R714 | 1-216-068-00 | METAL CHIP | 6.2K | 5% | 1/10W | |
| R716 | 1-216-056-00 | METAL CHIP | 2K | 5% | 1/10W | |
| R717 | 1-216-056-00 | METAL CHIP | 2K | 5% | 1/10W | |
| R718 | 1-216-056-00 | METAL CHIP | 2K | 5% | 1/10W | |
| R719 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R720 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R721 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R722 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R723 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R724 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R725 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R726 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R727 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R728 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R729 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R730 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R731 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R732 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R733 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R734 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R735 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R736 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R737 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R738 | 1-216-082-00 | METAL CHIP | 24K | 5% | 1/10W | |
| R739 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R740 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R741 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R742 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R744 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R745 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R746 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R747 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R749 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R750 | 1-216-087-00 | METAL CHIP | 39K | 5% | 1/10W | |
| R751 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R752 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R753 | 1-216-018-00 | METAL CHIP | 51 | 5% | 1/10W | |
| R754 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R755 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R756 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W | |
| R760 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R761 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R762 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R763 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R764 ⚠ | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R765 ⚠ | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R766 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R767 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R768 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R769 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R770 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |

### VARIABLE RESISTOR

| Ref.No | Part No. | Description |
|---|---|---|
| RV701 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV702 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV703 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV704 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV705 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV706 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV707 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV708 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV709 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV710 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV711 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV712 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV713 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV714 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV715 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV716 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV717 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |
| RV718 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K |

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### *A-7060-260-A VI-7 BOARD, COMPLETE

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| Part No. | Description |
|---|---|
| 2-279-715-21 | RIVET, NYLON |
| 3-686-934-01 | REINFORCEMENT (A), FLAT CABLE |

### CAPACITOR

| Ref.No | Part No. | Description | | | |
|---|---|---|---|---|---|
| C101 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C102 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V |
| C103 | 1-163-257-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C104 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | | 50V |
| C105 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | | 50V |
| C106 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C107 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C108 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C109 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C110 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C111 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

# VI-7

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C112 | 1-163-103-00 | CERAMIC CHIP 27PF | 5% | 50V |
| C113 | 1-163-033-00 | CERAMIC CHIP 0.022MF | | 50V |
| C114 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C115 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 10% | 10V |
| C116 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 10% | 10V |
| C117 | 1-124-442-00 | ELECT 330MF | 20% | 6.3V |
| C118 | 1-135-091-00 | TANTAL. CHIP 1MF | 10% | 16V |
| C119 | 1-163-033-00 | CERAMIC CHIP 0.022MF | | 50V |
| C131 | 1-135-072-21 | TANTAL. CHIP 0.22MF | 10% | 35V |
| C132 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C133 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C134 | 1-163-035-00 | CERAMIC CHIP 0.047MF | | 50V |
| C135 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C136 | 1-163-117-00 | CERAMIC CHIP 100PF | 5% | 50V |
| C137 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C139 | 1-163-129-00 | CERAMIC CHIP 330PF | 5% | 50V |
| C141 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C142 | 1-163-133-00 | CERAMIC CHIP 470PF | 5% | 50V |
| C143 | 1-163-035-00 | CERAMIC CHIP 0.047MF | | 50V |
| C144 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C145 | 1-163-137-00 | CERAMIC CHIP 680PF | 10% | 50V |
| C146 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C147 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C148 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C149 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C150 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C151 | 1-135-104-00 | TANTAL. CHIP 10MF | 10% | 4V |
| C152 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C153 | 1-163-101-00 | CERAMIC CHIP 22PF | 5% | 50V |
| C154 | 1-163-111-00 | CERAMIC CHIP 56PF | 5% | 50V |
| C155 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C165 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 10% | 10V |
| C167 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 10% | 10V |
| C168 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C169 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C170 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C171 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C172 | 1-163-033-00 | CERAMIC CHIP 0.022MF | | 50V |
| C174 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C175 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C176 | 1-163-111-00 | CERAMIC CHIP 56PF | 5% | 50V |
| C178 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 10% | 10V |
| C179 | 1-163-111-00 | CERAMIC CHIP 56PF | 5% | 50V |
| C180 | 1-163-133-00 | CERAMIC CHIP 470PF | 5% | 50V |
| C181 | 1-163-111-00 | CERAMIC CHIP 56PF | 5% | 50V |
| C182 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C183 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C184 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C185 | 1-163-075-00 | CERAMIC CHIP 0.047MF | 10% | 25V |
| C186 | 1-163-033-00 | CERAMIC CHIP 0.022MF | 10% | 25V |
| C187 | 1-163-075-00 | CERAMIC CHIP 0.047MF | 10% | 25V |
| C188 | 1-163-074-00 | CERAMIC CHIP 0.033MF | 10% | 25V |
| C189 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C190 | 1-163-075-00 | CERAMIC CHIP 0.047MF | 10% | 25V |
| C191 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C192 | 1-163-145-00 | CERAMIC CHIP 0.0015MF | 10% | 50V |
| C193 | 1-163-131-00 | CERAMIC CHIP 390PF | 5% | 50V |
| C196 | 1-163-013-00 | CERAMIC CHIP 0.0022MF | 10% | 50V |
| C199 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C200 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C201 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C202 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C203 | 1-163-074-00 | CERAMIC CHIP 0.033MF | 10% | 25V |
| C204 | 1-163-129-00 | CERAMIC CHIP 330PF | 10% | 50V |
| C205 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C206 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C207 | 1-163-088-00 | CERAMIC CHIP 5PF | 0.25PF | 50V |
| C208 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C209 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C210 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C211 | 1-163-131-00 | CERAMIC CHIP 390PF | 5% | 50V |
| C212 | 1-163-129-00 | CERAMIC CHIP 330PF | 10% | 50V |
| C213 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C214 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C215 | 1-163-115-00 | CERAMIC CHIP 82PF | 5% | 50V |
| C216 | 1-163-143-00 | CERAMIC CHIP 0.0012MF | 5% | 50V |
| C217 | 1-163-129-00 | CERAMIC CHIP 330PF | 10% | 50V |
| C218 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C219 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C220 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C221 | 1-163-033-00 | CERAMIC CHIP 0.022MF | | 50V |
| C222 | 1-163-033-00 | CERAMIC CHIP 0.022MF | | 50V |
| C223 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C224 | 1-135-072-21 | TANTAL. CHIP 0.22MF | 10% | 35V |
| C225 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C226 | 1-163-035-00 | CERAMIC CHIP 0.047MF | | 50V |
| C227 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C229 | 1-135-096-21 | TANTAL. CHIP 4.7MF | 10% | 10V |
| C230 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C231 | 1-163-033-00 | CERAMIC CHIP 0.022MF | 10% | 25V |
| C232 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C233 | 1-163-129-00 | CERAMIC CHIP 330PF | 5% | 50V |
| C234 | 1-163-129-00 | CERAMIC CHIP 330PF | 5% | 50V |
| C235 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C236 | 1-163-093-00 | CERAMIC CHIP 10PF | 5% | 50V |
| C237 | 1-163-108-00 | CERAMIC CHIP 43PF | 5% | 50V |
| C238 | 1-163-104-00 | CERAMIC CHIP 30PF | 5% | 50V |
| C240 | 1-163-257-00 | CERAMIC CHIP 180PF | 5% | 50V |
| C241 | 1-163-143-00 | CERAMIC CHIP 0.0018MF | 10% | 50V |
| C242 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C243 | 1-163-129-00 | CERAMIC CHIP 330PF | 10% | 50V |
| C246 | 1-135-073-00 | TANTAL. CHIP 0.33MF | 10% | 35V |
| C247 | 1-135-070-00 | TANTAL. CHIP 0.1MF | 10% | 35V |
| C248 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C249 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C250 | 1-163-118-00 | CERAMIC CHIP 110PF | 5% | 50V |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C251 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C252 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C253 | 1-163-335-11 | CERAMIC CHIP 0.001MF | 5% | 50V |
| C254 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C255 | 1-163-088-00 | CERAMIC CHIP 5PF | 0.25PF | 50V |
| C256 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C257 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C259 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C260 | 1-135-099-00 | TANTAL. CHIP 2.2MF | 10% | 6.3V |
| C261 | 1-135-103-00 | TANTAL. CHIP 3.3MF | 10% | 4V |
| C262 | 1-163-019-00 | CERAMIC CHIP 0.0068MF | 10% | 50V |
| C263 | 1-163-145-00 | CERAMIC CHIP 0.0015MF | 10% | 50V |
| C264 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C265 | 1-163-113-00 | CERAMIC CHIP 68PF | 5% | 50V |
| C266 | 1-163-117-00 | CERAMIC CHIP 100PF | 5% | 50V |
| C267 | 1-163-129-00 | CERAMIC CHIP 330PF | 5% | 50V |
| C268 | 1-163-105-00 | CERAMIC CHIP 33PF | 5% | 50V |
| C269 | 1-163-145-00 | CERAMIC CHIP 0.0015MF | 5% | 50V |
| C270 | 1-163-101-00 | CERAMIC CHIP 22PF | 5% | 50V |
| C271 | 1-163-111-00 | CERAMIC CHIP 56PF | 5% | 50V |
| C272 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 5% | 50V |
| C273 | 1-163-133-00 | CERAMIC CHIP 470PF | 5% | 50V |
| C274 | 1-163-115-00 | CERAMIC CHIP 82PF | 5% | 50V |
| C275 | 1-163-115-00 | CERAMIC CHIP 82PF | 5% | 50V |
| C276 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C277 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C278 | 1-124-233-00 | ELECT 10MF | 20% | 16V |
| C279 | 1-124-222-00 | ELECT 22MF | 20% | 6.3V |
| C280 | 1-163-035-00 | CERAMIC CHIP 0.047MF | | 50V |
| C281 | 1-124-222-00 | ELECT 22MF | 20% | 6.3V |
| C283 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C284 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 5% | 50V |
| C285 | 1-124-499-11 | ELECT 1MF | 20% | 50V |
| C286 | 1-163-075-00 | CERAMIC CHIP 0.047MF | 10% | 25V |
| C287 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C288 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C289 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C290 | 1-163-115-00 | CERAMIC CHIP 82PF | 5% | 50V |
| C291 | 1-124-587-11 | ELECT 220MF | 20% | 6.3V |
| C292 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C293 | 1-135-100-21 | TANTAL. CHIP 6.8MF | 10% | 6.3V |
| C294 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C295 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C296 | 1-124-233-00 | ELECT 10MF | 20% | 16V |
| C297 | 1-163-129-00 | CERAMIC CHIP 330PF | 10% | 50V |
| C299 | 1-163-121-00 | CERAMIC CHIP 150PF | 5% | 50V |
| C301 | 1-163-105-00 | CERAMIC CHIP 33PF | 5% | 50V |
| C303 | 1-135-091-00 | TANTAL. CHIP 1MF | 10% | 16V |
| C309 | 1-163-109-00 | CERAMIC CHIP 47PF | 5% | 50V |
| C310 | 1-163-013-00 | CERAMIC CHIP 0.0022MF | 10% | 50V |
| C311 | 1-163-309-00 | CERAMIC CHIP 7PF | 0.25PF | 50V |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | CONNECTOR | |
| CN001 | 1-564-610-21 | CONNECTOR, BOARD TO BOARD | |
| CN002 | 1-564-610-21 | CONNECTOR, BOARD TO BOARD | |
| CN003 | 1-564-610-21 | CONNECTOR, BOARD TO BOARD | |
| CN004 | 1-564-610-21 | CONNECTOR, BOARD TO BOARD | |
| CN101 | *1-564-005-00 | PIN, CONNECTOR 6P | |
| CN102 | *1-564-001-11 | PIN, CONNECTOR 2P | |
| CN103 | *1-564-002-00 | PIN, CONNECTOR 3P | |
| CN104 | 1-562-582-11 | SOCKET, CONNECTOR 24P | |
| CN109 | *1-564-013-00 | PIN, CONNECTOR 3P | |
| CN110 | 1-557-554-11 | CABLE, FLAT (26 CORE) | |
| | | TRIMMER | |
| CV101 | 1-141-227-00 | CAP, CERAMIC TRIMMER 20PF | |
| | | DIODE | |
| D103 | 8-719-100-05 | DIODE 1S2837 | |
| D104 | 8-719-100-05 | DIODE 1S2837 | |
| D105 | 8-719-100-05 | DIODE 1S2837 | |
| D106 | 8-719-101-23 | DIODE 1SS123 | |
| D107 | 8-719-101-23 | DIODE 1SS123 | |
| D109 | 8-719-101-23 | DIODE 1SS123 | |
| D110 | 8-719-101-23 | DIODE 1SS123 | |
| | | DELAY LINE | |
| DL101 | 1-415-385-11 | DELAY LINE, 2H (4.43MHZ) | |
| DL102 | 1-415-386-11 | DELAY LINE, 1H (13.3MHZ) | |
| | | FILTER | |
| FL102 | 1-409-394-12 | TRAP, CHROMA EMPHASIS | |
| FL103 | 1-235-438-11 | BPF, REC C | |
| FL104 | 1-235-437-11 | BPF, PB C | |
| FL105 | 1-235-632-11 | FILTER, BAND PASS (3.7MHZ)(BPF) | |
| FL106 | 1-235-633-11 | FILTER, BAND PASS(5.17MHZ)(BPF) | |
| FL107 | 1-235-436-11 | FILTER, BAND PASS (16KHZ) | |
| FL108 | 1-235-435-11 | FILTER, BAND PASS (45KHZ) | |
| | | IC | |
| IC101 | 8-752-003-00 | IC CX20030 | |
| IC102 | 8-752-003-10 | IC CX20031 | |
| IC103 | 8-752-202-10 | IC CX22021 | |
| IC104 | 8-752-003-20 | IC CX20032 | |
| IC105 | 8-759-914-56 | IC CX23054 | |
| IC106 | 8-752-202-20 | IC CX22022 | |
| IC107 | 8-757-991-00 | IC CX-7991 | |
| IC108 | 8-759-202-67 | IC CX20117 | |
| | | COIL | |
| L101 | 1-408-795-21 | INDUCTOR CHIP 330UH | |
| L110 | 1-408-777-00 | INDUCTOR CHIP 10UH | |
| L111 | 1-408-781-00 | INDUCTOR CHIP 22UH | |
| L119 | 1-408-765-21 | INDUCTOR CHIP 1UH | |

When indicating parts by reference number, please include the board name.

## VI-7

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L120 | 1-408-765-21 | INDUCTOR CHIP 1UH | |
| L121 | 1-408-792-00 | INDUCTOR CHIP 180UH | |
| L122 | 1-408-789-21 | INDUCTOR CHIP 100UH | |
| L123 | 1-408-781-00 | INDUCTOR CHIP 22UH | |
| L124 | 1-408-790-00 | INDUCTOR CHIP 120UH | |
| L125 | 1-410-167-41 | INDUCTOR CHIP 820UH | |
| L126 | 1-408-790-00 | INDUCTOR CHIP 120UH | |
| L127 | 1-408-781-00 | INDUCTOR CHIP 22UH | |
| L129 ⚠ | 1-408-785-21 | INDUCTOR CHIP 47UH | |
| L130 | 1-408-776-00 | INDUCTOR CHIP 8.2UH | |
| L131 | 1-408-795-21 | INDUCTOR CHIP 330UH | |
| L134 | 1-408-785-21 | INDUCTOR CHIP 47UH | |
| L135 | 1-408-790-00 | INDUCTOR CHIP 120UH | |
| L136 | 1-408-777-00 | INDUCTOR CHIP 10UH | |
| L137 | 1-408-785-21 | INDUCTOR CHIP 47UH | |
| L138 | 1-408-791-00 | INDUCTOR CHIP 150UH | |
| L142 | 1-410-167-41 | INDUCTOR CHIP 820UH | |
| L143 | 1-408-789-21 | INDUCTOR CHIP 100UH | |
| | | VARIABLE COIL | |
| LV102 | 1-459-546-11 | COIL, VARIABLE 150UH | |
| LV103 | 1-404-594-11 | COIL, VARIABLE 10UH | |
| | | TRANSISTOR | |
| Q101 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q102 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q103 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q104 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q108 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q109 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q113 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q114 | 8-729-900-99 | TRANSISTOR DTA144WK | |
| Q115 | 8-729-116-06 | TRANSISTOR 2SK160-K6 | |
| Q116 | 8-729-900-99 | TRANSISTOR DTA144WK | |
| Q117 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q118 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q119 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q120 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q121 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q122 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q123 | 8-729-900-61 | TRANSISTOR DTA114ES | |
| Q124 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q125 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q126 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q127 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q128 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q130 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q131 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q132 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| | | RESISTOR | |
| R101 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R102 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R103 | 1-216-063-00 | METAL CHIP 3.9K 5% 1/10W | |
| R104 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |
| R105 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R106 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R107 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R108 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R109 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R110 | 1-216-063-00 | METAL CHIP 3.9K 5% 1/10W | |
| R111 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R112 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R113 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R114 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R115 | 1-216-061-00 | METAL CHIP 3.3K 5% 1/10W | |
| R116 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R117 | 1-216-061-00 | METAL CHIP 3.3K 5% 1/10W | |
| R118 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R119 | 1-216-131-00 | METAL CHIP 2.7M 5% 1/10W | |
| R120 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R121 | 1-216-095-00 | METAL CHIP 82K 5% 1/10W | |
| R122 | 1-216-093-00 | METAL CHIP 68K 5% 1/10W | |
| R123 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R124 | 1-216-093-00 | METAL CHIP 68K 5% 1/10W | |
| R125 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R126 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R127 | 1-216-059-00 | METAL CHIP 2.7K 5% 1/10W | |
| R128 | 1-216-047-00 | METAL CHIP 820 5% 1/10W | |
| R129 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R130 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R145 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R146 | 1-216-101-00 | METAL CHIP 150K 5% 1/10W | |
| R147 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R148 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R149 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |
| R150 | 1-216-059-00 | METAL CHIP 2.7K 5% 1/10W | |
| R151 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R153 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R155 | 1-216-099-00 | METAL CHIP 120K 5% 1/10W | |
| R157 | 1-216-113-00 | METAL CHIP 470K 5% 1/10W | |
| R158 | 1-216-075-00 | METAL CHIP 12K 5% 1/10W | |
| R159 | 1-216-075-00 | METAL CHIP 12K 5% 1/10W | |
| R160 | 1-216-027-00 | METAL CHIP 120 5% 1/10W | |
| R161 | 1-216-035-00 | METAL CHIP 270 5% 1/10W | |
| R162 | 1-216-039-00 | METAL CHIP 390 5% 1/10W | |
| R163 | 1-216-039-00 | METAL CHIP 390 5% 1/10W | |
| R164 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R165 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R175 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R181 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R182 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R183 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R184 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R185 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R186 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R187 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R188 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R189 | 1-216-009-00 | METAL CHIP | 22 | 5% | 1/10W | |
| R190 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R191 | 1-216-027-00 | METAL CHIP | 120 | 5% | 1/10W | |
| R192 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R193 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R194 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R195 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R196 | 1-216-087-00 | METAL CHIP | 39K | 5% | 1/10W | |
| R197 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R198 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R199 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R200 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R201 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R202 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R203 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R204 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R205 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R206 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R207 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R208 | 1-216-117-00 | METAL CHIP | 680K | 5% | 1/10W | |
| R209 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R211 | 1-216-115-00 | METAL CHIP | 560K | 5% | 1/10W | |
| R212 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R213 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R214 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R215 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R216 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R217 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R218 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R219 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R220 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R221 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W | |
| R222 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R225 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R226 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R227 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R228 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R229 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R230 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R231 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R232 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R233 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R234 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R235 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R237 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R238 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R239 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R240 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R241 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R242 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R243 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R244 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R245 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R246 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R247 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R248 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R249 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R250 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R251 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R252 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R253 | 1-216-103-00 | METAL CHIP | 180K | 5% | 1/10W | |
| R254 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R255 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R256 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R257 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R258 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R259 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R260 | 1-216-095-00 | METAL CHIP | 82K | 5% | 1/10W | |
| R261 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R262 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W | |
| R263 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R264 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R265 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R266 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R268 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R269 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R270 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R271 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R272 | 1-216-115-00 | METAL CHIP | 560K | 5% | 1/10W | |
| R273 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R274 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R275 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R276 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R277 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R278 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R279 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R280 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R281 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R282 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R283 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R284 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R285 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R287 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |
| R289 | 1-216-015-00 | METAL CHIP | 39 | 5% | 1/10W | |
| R290 | 1-216-015-00 | METAL CHIP | 39 | 5% | 1/10W | |
| R291 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R292 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R293 | 1-216-117-00 | METAL CHIP | 680K | 5% | 1/10W | |
| R294 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R295 | 1-216-117-00 | METAL CHIP | 680K | 5% | 1/10W | |
| R296 ⚠ | 1-216-025-91 | METAL CHIP | 100 | 5% | 1/10W | |
| R297 ⚠ | 1-216-025-91 | METAL CHIP | 100 | 5% | 1/10W | |
| R298 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R299 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R300 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R301 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R302 | 1-216-039-00 | METAL CHIP 390 5% 1/10W | |
| R304 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R305 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R306 | 1-216-025-00 | METAL CHIP 100 5% 1/10W | |
| R307 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R308 | ⚠.1-216-049-91 | METAL CHIP 1K 5% 1/10W | |
| R309 | ⚠.1-216-049-91 | METAL CHIP 1K 5% 1/10W | |
| R310 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R311 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R312 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R314 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R315 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R316 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R319 | 1-216-039-00 | METAL CHIP 390 5% 1/10W | |
| R320 | 1-216-059-00 | METAL CHIP 2.7K 5% 1/10W | |
| R323 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R336 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R337 | 1-216-099-00 | METAL CHIP 120K 5% 1/10W | |
| R341 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R342 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R343 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R344 | 1-216-113-00 | METAL CHIP 470K 5% 1/10W | |
| R345 | 1-216-031-00 | METAL CHIP 180 5% 1/10W | |
| R346 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R347 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R349 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R350 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R355 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |

### VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV101 | 1-228-825-21 | RES, ADJ, METAL GLAZE 470 | |
| RV102 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |
| RV103 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |
| RV104 | 1-228-828-21 | RES, ADJ, METAL GLAZE 4.7K | |
| RV105 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |
| RV106 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |
| RV107 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |
| RV108 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |
| RV109 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |
| RV110 | 1-228-829-21 | RES, ADJ, METAL GLAZE 10K | |
| RV111 | 1-228-830-21 | RES, ADJ, METAL GLAZE 22K | |
| RV112 | 1-228-834-11 | RES, ADJ, METAL GLAZE 220K | |
| RV113 | 1-228-876-00 | RES, ADJ, METAL GLAZE 47K | |

### CRYSTAL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| X101 | 1-527-345-00 | CRYSTAL, OSCILLATOR 4.43MHz | |
| X102 | 1-567-345-21 | VIBRATOR, CRYSTAL 5.86MHz | |
| X103 | 1-567-347-11 | OSCILLATOR, CERAMIC 13.3MHz | |

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| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | *A-7070-168-A | EX-3 BOARD, COMPLETED | |

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### CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C361 | 1-135-100-21 | TANTAL. CHIP 6.8MF 20% 6.3V | |
| C362 | 1-163-088-00 | CERAMIC CHIP 5PF 0.25PF 50V | |
| C363 | 1-163-234-00 | CERAMIC CHIP 20PF 5% 50V | |
| C364 | 1-163-101-00 | CERAMIC CHIP 22PF 5% 50V | |
| C365 | 1-163-085-00 | CERAMIC CHIP 2PF 0.25PF 50V | |
| C366 | 1-163-093-00 | CERAMIC CHIP 10PF 5% 50V | |
| C367 | 1-163-121-00 | CERAMIC CHIP 150PF 5% 50V | |
| C368 | 1-163-109-00 | CERAMIC CHIP 47PF 5% 50V | |
| C369 | 1-163-095-00 | CERAMIC CHIP 12PF 5% 50V | |
| C370 | 1-135-096-21 | TANTAL. CHIP 4.7MF 20% 10V | |
| C371 | 1-163-035-00 | CERAMIC CHIP 0.047MF 50V | |
| C372 | 1-163-119-00 | CERAMIC CHIP 120PF 5% 50V | |
| C373 | 1-163-107-00 | CERAMIC CHIP 39PF 5% 50V | |
| C374 | 1-163-112-00 | CERAMIC CHIP 62PF 5% 50V | |
| C375 | 1-163-101-00 | CERAMIC CHIP 22PF 5% 50V | |
| C376 | 1-163-114-00 | CERAMIC CHIP 75PF 5% 50V | |
| C377 | 1-135-096-21 | TANTAL. CHIP 4.7MF 20% 10V | |
| C378 | 1-163-121-00 | CERAMIC CHIP 150PF 5% 50V | |
| C379 | 1-163-113-00 | CERAMIC CHIP 68PF 5% 50V | |
| C380 | 1-163-109-00 | CERAMIC CHIP 47PF 5% 50V | |
| C381 | 1-135-100-21 | TANTAL. CHIP 6.8MF 20% 6.3V | |
| C382 | 1-163-093-00 | CERAMIC CHIP 10PF 5% 50V | |
| C383 | 1-135-100-21 | TANTAL. CHIP 6.8MF 20% 6.3V | |
| C384 | 1-163-119-00 | CERAMIC CHIP 120PF 5% 50V | |
| C385 | 1-163-015-00 | CERAMIC CHIP 0.0033MF 10% 50V | |
| C386 | 1-163-033-00 | CERAMIC CHIP 0.022MF 10% 25V | |
| C387 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |

### DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D361 | 8-719-101-23 | DIODE 1SS123 | |
| D362 | 8-719-101-23 | DIODE 1SS123 | |

### COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L361 | 1-410-219-31 | INDUCTOR CHIP 180UH | |
| L362 | 1-410-220-31 | INDUCTOR CHIP 220UH | |
| L363 | 1-410-220-31 | INDUCTOR CHIP 220UH | |
| L364 | 1-410-214-31 | INDUCTOR CHIP 68UH | |
| L365 | 1-410-216-31 | INDUCTOR CHIP 100UH | |
| L366 | 1-410-212-51 | INDUCTOR CHIP 47UH | |
| L367 | 1-410-213-51 | INDUCTOR CHIP 56UH | |
| L368 | 1-410-214-31 | INDUCTOR CHIP 68UH | |
| L369 | 1-410-216-31 | INDUCTOR CHIP 100UH | |
| L370 | 1-410-213-51 | INDUCTOR CHIP 56UH | |
| L371 | 1-410-215-31 | INDUCTOR CHIP 82UH | |
| L372 | 1-410-213-51 | INDUCTOR CHIP 56UH | |
| L373 | 1-410-213-51 | INDUCTOR CHIP 56UH | |
| L374 | 1-410-192-51 | INDUCTOR CHIP 1UH | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q361 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q362 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q363 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q364 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q365 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q366 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q367 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q368 | 8-729-312-22 | TRANSISTOR 2SA1122 | |
| Q370 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q373 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q374 | 8-729-900-99 | TRANSISTOR DTA144WK | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R357 | 1-216-051-00 | METAL CHIP 1.2K 5% 1/10W | |
| R358 | 1-216-059-00 | METAL CHIP 2.7K 5% 1/10W | |
| R359 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |
| R361 | 1-216-063-00 | METAL CHIP 3.9K 5% 1/10W | |
| R362 | 1-216-069-00 | METAL CHIP 6.8K 5% 1/10W | |
| R363 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R364 | 1-216-039-00 | METAL CHIP 390 5% 1/10W | |
| R365 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R366 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R367 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R368 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R369 | 1-216-061-00 | METAL CHIP 3.3K 5% 1/10W | |
| R370 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R371 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R372 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R373 | 1-216-039-00 | METAL CHIP 390 5% 1/10W | |
| R374 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R375 | 1-216-051-00 | METAL CHIP 1.2K 5% 1/10W | |
| R376 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R377 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R378 | 1-216-051-00 | METAL CHIP 1.2K 5% 1/10W | |
| R379 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R380 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R381 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R382 | 1-216-047-00 | METAL CHIP 820 5% 1/10W | |
| R383 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R384 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R385 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R386 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R387 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R388 | 1-216-025-00 | METAL CHIP 100 5% 1/10W | |
| R389 | 1-216-039-00 | METAL CHIP 390 5% 1/10W | |
| R390 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R391 | 1-216-001-00 | METAL CHIP 10 5% 1/10W | |
| R392 | 1-216-067-00 | METAL CHIP 5.6K 5% 1/10W | |
| R393 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R394 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R395 | 1-216-051-00 | METAL CHIP 1.2K 5% 1/10W | |
| R397 | 1-216-025-00 | METAL CHIP 100 5% 1/10W | |

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*1-161-826-11 TK-2 BOARD
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CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C351 | 1-163-137-00 | CERAMIC CHIP 680PF 10% 50V | |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN016 | *1-506-580-11 | PIN, BOARD TO BOARD 2P | |

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D351 | 8-719-100-03 | DIODE 1S2835 | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q351 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q352 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q353 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R351 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R352 | 1-216-119-00 | METAL CHIP 820K 5% 1/10W | |
| R353 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R354 | 1-216-109-00 | METAL CHIP 330K 5% 1/10W | |

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*A-7060-245-A AR-2 BOARD, COMPLETE
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*3-686-957-01 CASE (MAIN), SHIELD, AR

CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C101 | 1-163-077-00 | CERAMIC CHIP 0.1MF 50V | |
| C102 | 1-124-224-00 | ELECT 47MF 20% 6.3V | |
| C103 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% 50V | |
| C104 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% 50V | |
| C105 | 1-163-075-00 | CERAMIC CHIP 0.047MF 10% 25V | |
| C106 | 1-131-347-00 | TANTALUM 1MF 10% 35V | |
| C107 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% 50V | |
| C108 | 1-163-075-00 | CERAMIC CHIP 0.047MF 10% 25V | |
| C109 | 1-163-075-00 | CERAMIC CHIP 0.047MF 10% 25V | |
| C110 | 1-124-225-00 | ELECT 100MF 20% 6.3V | |
| C111 | 1-163-077-00 | CERAMIC CHIP 0.1MF 50V | |
| C112 | 1-124-225-00 | ELECT 100MF 20% 6.3V | |
| C113 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% 50V | |
| C114 | 1-131-347-00 | TANTALUM 1MF 10% 35V | |
| C115 | 1-163-075-00 | CERAMIC CHIP 0.047MF 10% 25V | |
| C116 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% 50V | |
| C117 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% 50V | |
| C118 | 1-163-075-00 | CERAMIC CHIP 0.047MF 10% 25V | |
| C119 | 1-124-255-00 | ELECT 1MF 20% 50V | |

When indicating parts by reference number, please include the board name.

# AR-2

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C120 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C122 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C123 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C124 | 1-124-222-00 | ELECT | 22MF | 20% | 6.3V |
| C125 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C126 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V |
| C128 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C129 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C130 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C131 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C132 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C133 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C134 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C135 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C136 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C138 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C139 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C140 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C141 | 1-163-127-00 | CERAMIC CHIP | 270PF | 5% | 50V |
| C142 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C143 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C144 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C145 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C146 | 1-163-107-00 | CERAMIC CHIP | 39PF | 5% | 50V |
| C147 | 1-163-129-00 | CERAMIC CHIP | 330PF | 5% | 50V |
| C148 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C149 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C401 | 1-163-019-00 | CERAMIC CHIP | 0.0068MF | 10% | 50V |
| C402 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C403 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C404 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C405 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C406 | 1-163-257-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C407 | 1-163-083-00 | TANTAL | 0.47MF | 20% | 25V |
| C408 | 1-163-145-00 | CERAMIC CHIP | 0.0015MF | 5% | 50V |
| C409 | 1-163-257-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C410 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C411 | 1-163-014-00 | CERAMIC CHIP | 0.0027MF | 10% | 50V |
| C412 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C413 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C414 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C415 | 1-124-225 00 | ELECT | 100MF | 20% | 6.3V |
| C416 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C417 | 1-124-224-00 | ELECT | 47MF | 20% | 6.3V |
| C418 | 1-163-005-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C419 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C420 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C421 | 1-163-088-00 | CERAMIC CHIP | 5PF | 0.25PF | 50V |
| C422 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C423 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C424 | 1-163-079-00 | CERAMIC CHIP | 0.039MF | 10% | 25V |
| C425 | 1-163-137-00 | CERAMIC CHIP | 680PF | 5% | 50V |
| C426 | 1-163-020-00 | CERAMIC CHIP | 0.0082MF | 10% | 50V |

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C427 | 1-124-255-00 | ELECT | 1MF | 20% | 50V |
| C428 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C429 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C430 | 1-123-618-00 | ELECT | 22MF | 20% | 6.3V |
| C431 | 1-123-612-00 | ELECT | 2.2MF | 20% | 50V |
| C432 | 1-124-253-00 | ELECT | 0.47MF | 20% | 50V |
| C433 | 1-123-661-00 | ELECT | 100MF | 20% | 6.3V |
| C434 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C436 | 1-123-661-00 | ELECT | 100MF | 20% | 6.3V |
| C437 | 1-123-610-00 | ELECT | 0.47MF | 20% | 50V |
| C438 | 1-163-257-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C439 | 1-163-014-00 | CERAMIC CHIP | 0.0027MF | 10% | 50V |
| C441 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C442 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C444 | 1-163-005-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C445 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C446 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |

### CONNECTOR

| Ref.No | Part No. | Description |
|---|---|---|
| CN007 | 1-564-098-21 | CONNECTOR, BOARD TO BOARD |
| CN008 | 1-564-098-21 | CONNECTOR, BOARD TO BOARD |
| CN009 | 1-564-098-21 | CONNECTOR, BOARD TO BOARD |
| CN111 | *1-564-016-00 | PIN, CONNECTOR 6P |
| CN112 | *1-564-003-00 | PIN, CONNECTOR 4P |
| CN113 | *1-564-014-00 | PIN, CONNECTOR 4P |
| CN114 | *1-564-012-00 | PIN, CONNECTOR 2P |

### DIODE

| Ref.No | Part No. | Description |
|---|---|---|
| D101 | 8-719-101-23 | DIODE 1SS123 |

### FILTER

| Ref.No | Part No. | Description |
|---|---|---|
| FL401 | 1-235-398-11 | BPF 1.5MHZ |

### IC

| Ref.No | Part No. | Description |
|---|---|---|
| IC101 | 8-752-003-40 | IC CX20034 |
| IC401 | 8-752-003-73 | IC CX20037-2 |

### COIL

| Ref.No | Part No. | Description |
|---|---|---|
| L101 | 1-408-970-21 | MICRO INDUCTOR 10UH |
| L102 | 1-408-984-21 | MICRO INDUCTOR 150UH |
| L103 | 1-407-161-XX | MICRO INDUCTOR 22UH |
| L104 | 1-407-161-XX | MICRO INDUCTOR 22UH |
| L105 | 1-407-161-XX | MICRO INDUCTOR 22UH |
| L106 | 1-408-966-21 | MICRO INDUCTOR 4.7UH |
| L107 | 1-407-177-XX | MICRO INDUCTOR 470UH |
| L108 | 1-407-161-XX | MICRO INDUCTOR 22UH |
| L109 | 1-407-172-XX | MICRO INDUCTOR 180UH |
| L111 | 1-407-160-XX | MICRO INDUCTOR 18UH |
| L401 | 1-408-948-00 | MICRO INDUCTOR 220UH |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | | VARIABLE COIL | | | | |
| LV101 | 1-459-548-11 | COIL, VARIABLE 330UH | | | | |
| | | TRANSISTOR | | | | |
| Q101 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q102 | 8-729-901-03 | TRANSISTOR DTC144WK | | | | |
| Q103 | 8-729-901-03 | TRANSISTOR DTC144WK | | | | |
| Q104 | 8-729-271-23 | TRANSISTOR 2SC2712 | | | | |
| Q105 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q106 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q401 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q404 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q405 | 8-729-900-99 | TRANSISTOR DTA144WK | | | | |
| Q407 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q408 | 8-729-100-76 | TRANSISTOR 2SA812 | | | | |
| | | RESISTOR | | | | |
| R101 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R102 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R103 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R104 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R105 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R106 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R107 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R108 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R109 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R110 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R111 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R112 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R113 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R114 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R115 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R116 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R117 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R118 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R119 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R120 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R121 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R122 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R123 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R124 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R125 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R126 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R127 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R128 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R129 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R130 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R131 | 1-216-105-00 | METAL CHIP | 220K | 5% | 1/10W | |
| R132 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R133 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R134 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R135 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R136 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R137 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R138 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R139 | 1-216-023-00 | METAL CHIP | 82 | 5% | 1/10W | |
| R140 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R141 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R142 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R143 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R144 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R145 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R146 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R401 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R402 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R403 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R404 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R405 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R406 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R407 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R408 | 1-216-060-00 | METAL CHIP | 3K | 5% | 1/10W | |
| R409 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R410 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R411 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R413 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R414 | 1-216-001-00 | METAL CHIP | 10 | 5% | 1/10W | |
| R415 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R416 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R417 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R418 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R419 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R420 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R421 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R422 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R423 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R424 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R425 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R426 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R427 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R428 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R429 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R430 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R431 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R432 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R434 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R435 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R437 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R438 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R439 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R440 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R441 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R442 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R444 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R445 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R446 | 1-216-023-00 | METAL CHIP | 82 | 5% | 1/10W | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R447 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |
| R448 | 1-216-037-00 | METAL CHIP 330 5% 1/10W | |
| R449 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV101 | 1-230-523-11 | RES, ADJ, METAL GLAZE 10K | |
| RV102 | 1-230-522-11 | RES, ADJ, METAL GLAZE 4.7K | |
| RV103 | 1-230-524-11 | RES, ADJ, METAL GLAZE 22K | |
| RV104 | 1-230-522-11 | RES, ADJ, METAL GLAZE 4.7K | |
| RV105 | 1-230-523-11 | RES, ADJ, METAL GLAZE 10K | |
| RV106 | 1-230-522-11 | RES, ADJ, METAL GLAZE 4.7K | |
| RV401 | 1-230-524-11 | RES, ADJ, METAL GLAZE 22K | |
| RV402 | 1-230-523-11 | RES, ADJ, METAL GLAZE 10K | |

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*A-7060-246-A SK-8 BOARD, COMPLETE
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*3-686-795-01 SPRING (SK)
*3-686-822-01 HOLDER, LCD

CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C491 | 1-163-031-00 | CERAMIC CHIP 0.01MF 50V | |
| C601 | 1-163-125-00 | CERAMIC CHIP 220PF 5% 50V | |
| C602 | 1-163-125-00 | CERAMIC CHIP 220PF 5% 50V | |
| C603 | 1-163-077-00 | CERAMIC CHIP 0.1MF 50V | |
| C604 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C605 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C606 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C607 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C609 | 1-123-617-00 | ELECT 10MF 20% 16V | |
| C610 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C611 | 1-123-617-00 | ELECT 10MF 20% 16V | |
| C612 | 1-163-081-00 | CERAMIC CHIP 0.22MF 25V | |
| C613 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C617 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C618 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C619 | 1-163-005-00 | CERAMIC CHIP 470PF 10% 50V | |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN605 | 1-562-589-11 | SOCKET, DIN (SMALL TYPE) 5P | |

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D601 | 8-719-100-05 | DIODE 1S2837 | |
| D602 | 8-719-100-05 | DIODE 1S2837 | |
| D603 | 8-719-100-05 | DIODE 1S2837 | |
| D604 | 8-719-100-05 | DIODE 1S2837 | |
| D605 | 8-719-100-05 | DIODE 1S2837 | |
| D606 | 8-719-100-05 | DIODE 1S2837 | |
| D607 | 8-719-100-05 | DIODE 1S2837 | |
| D608 | 8-719-100-03 | DIODE 1S2835 | |
| D609 | 8-719-100-05 | DIODE 1S2837 | |
| D610 | 8-719-100-05 | DIODE 1S2837 | |
| D611 | 8-719-100-05 | DIODE 1S2837 | |
| D612 | 8-719-100-05 | DIODE 1S2837 | |
| D613 | 8-719-100-03 | DIODE 1S2835 | |
| D614 | 8-719-918-67 | DIODE GL-1EG102 | |
| D615 | 8-719-918-65 | DIODE GL-1PR102 | |
| D616 | 8-719-918-67 | DIODE GL-1EG102 | |
| D617 | 8-719-918-65 | DIODE GL-1PR102 | |
| D618 | 8-719-918-66 | DIODE GL-1HY102 | |
| D619 | 8-719-918-66 | DIODE GL-1HY102 | |
| D620 | 8-719-106-71 | DIODE RD12M-B2 | |
| D621 | 8-719-106-71 | DIODE RD12M-B2 | |
| D622 | 8-719-106-71 | DIODE RD12M-B2 | |

IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC601 | 8-759-105-47 | IC UPD7503G-324 | |
| IC602 | 8-759-200-77 | IC TC4028BF | |
| IC603 | 8-757-991-00 | IC CX7991 | |
| IC604 | 8-759-100-93 | IC UPC393G2 | |
| IC605 | 8-759-200-82 | IC TC4069UBF | |

DISPLAY PANEL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| ND601 | 1-806-917-11 | DISPLAY PANEL, LIQUID CRYSTAL | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q601 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q602 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q603 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q604 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q605 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q606 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q607 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q608 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q609 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q610 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q611 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q612 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q613 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R601 | 1-216-109-00 | METAL CHIP 330K 5% 1/10W | |
| R602 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R603 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R604 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R605 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R606 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R607 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R608 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R609 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R610 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R611 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R612 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R613 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R614 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R615 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R616 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R617 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R618 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R619 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R620 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R621 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R622 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R623 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R624 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R625 | 1-216-031-00 | METAL CHIP | 180 | 5% | 1/10W | |
| R626 | 1-216-031-00 | METAL CHIP | 180 | 5% | 1/10W | |
| R627 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W | |
| R628 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R629 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R630 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R631 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R632 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R633 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R634 | 1-216-087-00 | METAL CHIP | 39K | 5% | 1/10W | |
| R635 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R636 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R639 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W | |
| R640 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R641 | 1-216-115-00 | METAL CHIP | 560K | 5% | 1/10W | |
| R642 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R643 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R644 | 1-216-109-00 | METAL CHIP | 330K | 5% | 1/10W | |
| R645 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R646 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R647 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R648 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R649 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R650 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R651 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R652 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R654 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| | | SWITCH | | | | |
| S601 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S602 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S603 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S604 | 1-554-364-00 | SWITCH, SLIDE | | | | |
| S605 | 1-554-364-00 | SWITCH, SLIDE | | | | |
| S606 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S607 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S608 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S609 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S610 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S611 | 1-554-174-00 | SWITCH, KEY BOARD | | | | |
| S612 | 1-570-134-11 | SWITCH, SLIDE | | | | |

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | | CRYSTAL | | | | |
| X601 | 1-527-532-00 | OSCILLATOR, CERAMIC 400KHz | | | | |
| ************************************************************** | | | | | | |
| | *A-7060-242-A | SV-14 BOARD, COMPLETE<br>********************** | | | | |
| | 2-279-715-21 | RIVET, NYLON | | | | |
| | | CAPACITOR | | | | |
| C501 | 1-124-236-00 | ELECT | 47MF | 20% | 10V | |
| C502 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V | |
| C503 | 1-124-577-11 | ELECT | 82MF | 20% | 10V | |
| C504 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V | |
| C505 | 1-124-577-11 | ELECT | 82MF | 20% | 10V | |
| C506 | 1-124-577-11 | ELECT | 82MF | 20% | 10V | |
| C507 | 1-124-233-00 | ELECT | 10MF | 20% | 16V | |
| C508 | 1-124-234-00 | ELECT | 22MF | 20% | 16V | |
| C510 | 1-124-255-00 | ELECT | 1MF | 20% | 50V | |
| C511 | 1-124-255-00 | ELECT | 1MF | 20% | 50V | |
| C512 | 1-124-255-00 | ELECT | 1MF | 20% | 50V | |
| C513 | 1-124-258-00 | ELECT | 3.3MF | 20% | 25V | |
| C515 | 1-124-233-00 | ELECT | 10MF | 20% | 16V | |
| C516 | 1-124-233-00 | ELECT | 10MF | 20% | 16V | |
| C517 | 1-124-233-00 | ELECT | 10MF | 20% | 16V | |
| C518 | 1-135-091-00 | TANTAL. CHIP | 1MF | 20% | 16V | |
| C519 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V | |
| C521 | 1-124-245-00 | ELECT | 4.7MF | 20% | 16V | |
| C522 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V | |
| C523 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V | |
| C552 | 1-124-596-11 | ELECT | 27MF | 20% | 16V | |
| C553 | 1-124-596-11 | ELECT | 27MF | 20% | 16V | |
| C554 | 1-124-596-11 | ELECT | 27MF | 20% | 16V | |
| C558 | 1-124-275-00 | ELECT | 2.2MF | 20% | 35V | |
| C559 | 1-124-233-00 | ELECT | 10MF | 20% | 16V | |
| C560 | 1-124-275-00 | ELECT | 2.2MF | 20% | 35V | |
| C562 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C563 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C565 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V | |
| C566 | 1-163-061-00 | CERAMIC CHIP | 0.015MF | 10% | 50V | |
| C567 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V | |
| C568 | 1-163-074-00 | CERAMIC CHIP | 0.033MF | 10% | 25V | |
| C569 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V | |
| C570 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V | |
| C571 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V | |
| C572 | 1-124-287-00 | ELECT | 10MF | 20% | 10V | |
| C573 | 1-124-258-00 | ELECT | 3.3MF | 20% | 25V | |
| | | CONNECTOR | | | | |
| CN509 | 1-557-555-11 | CABLE, FLAT (25 CORE) | | | | |
| CN510 | *1-564-014-00 | PIN, CONNECTOR 4P | | | | |
| CN511 | *1-564-021-11 | PIN, CONNECTOR 11P | | | | |

When indicating parts by reference number, please include the board name.

# SV-14

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| CN512 | *1-564-014-00 | PIN, CONNECTOR 4P | | | | |
| | | DIODE | | | | |
| D501 | 8-719-200-35 | DIODE E10QS03 | | | | |
| D502 | 8-719-200-35 | DIODE E10QS03 | | | | |
| D504 | 8-719-200-35 | DIODE E10QS03 | | | | |
| D506 | 8-719-100-03 | DIODE 1S2835 | | | | |
| | | IC | | | | |
| IC501 | 8-759-202-45 | IC CX20114 | | | | |
| IC502 | 8-752-003-60 | IC CX20036 | | | | |
| IC504 | 8-759-100-94 | IC UPC358G2 | | | | |
| IC505 | 8-759-201-01 | IC TC4066BF | | | | |
| | | COIL | | | | |
| L501 | 1-410-125-11 | COIL, CHOKE 100UH | | | | |
| L502 | 1-410-126-11 | COIL, CHOKE 200UH | | | | |
| L503 | 1-410-126-11 | COIL, CHOKE 200UH | | | | |
| | | TRANSISTOR | | | | |
| Q501 | 8-729-105-29 | TRANSISTOR 2SA1385 | | | | |
| Q502 | 8-729-105-29 | TRANSISTOR 2SA1385 | | | | |
| Q503 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q504 | 8-729-700-08 | TRANSISTOR NJL7141E | | | | |
| Q508 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q509 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q510 | 8-729-100-76 | TRANSISTOR 2SA812 | | | | |
| Q511 | 8-729-100-76 | TRANSISTOR 2SA812 | | | | |
| Q512 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | | |
| Q513 | 8-729-901-01 | TRANSISTOR DTC144EK | | | | |
| Q514 | ⚠.8-729-100-76 | TRANSISTOR 2SA812 | | | | |
| Q515 | ⚠.8-729-901-01 | TRANSISTOR DTC144EK | | | | |
| Q516 | 8-729-100-76 | TRANSISTOR 2SA812 | | | | |
| Q517 | 8-729-901-06 | TRANSISTOR DTA144EK | | | | |
| Q518 | 8-729-901-01 | TRANSISTOR DTC144EK | | | | |
| Q519 | 8-729-901-06 | TRANSISTOR DTA144EK | | | | |
| | | RESISTOR | | | | |
| R501 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R502 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R503 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R504 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R505 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R506 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R507 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R508 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R509 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W | |
| R510 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R511 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R513 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W | |
| R514 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R517 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R518 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R519 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R520 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R524 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R551 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R552 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R553 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W | |
| R554 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R555 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R556 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R557 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R558 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R559 | 1-214-972-00 | METAL | 0.22 | 1% | 1/4W | |
| R560 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R561 | 1-216-234-00 | METAL CHIP | 33K | 5% | 1/8W | |
| R562 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R563 | 1-216-304-11 | METAL CHIP | 3.3 | 5% | 1/10W | |
| R564 | 1-216-304-11 | METAL CHIP | 3.3 | 5% | 1/10W | |
| R565 | 1-216-304-11 | METAL CHIP | 3.3 | 5% | 1/10W | |
| R566 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R568 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R569 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R570 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R571 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R572 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R573 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W | |
| R574 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W | |
| R575 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R576 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R578 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W | |
| R581 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R582 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R583 | 1-216-107-00 | METAL CHIP | 270K | 5% | 1/10W | |
| R584 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R585 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R587 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R588 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R589 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R590 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R591 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R592 | ⚠.1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R593 | ⚠.1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R595 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R596 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R597 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R598 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R599 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| | | VARIABLE RESISTOR | | | | |
| RV501 | 1-230-529-11 | RES, ADJ, METAL GLAZE 470K | | | | |
| RV502 | 1-230-528-11 | RES, ADJ, METAL GLAZE 220K | | | | |
| RV503 | 1-230-528-11 | RES, ADJ, METAL GLAZE 220K | | | | |
| RV504 | 1-230-523-11 | RES, ADJ, METAL GLAZE 10K | | | | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| | *A-7060-243-A | MC-8 BOARD, COMPLETE<br>******************** | | |
| | 2-279-715-21 | RIVET, NYLON | | |

CAPACITOR

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C501 | 1-124-233-00 | ELECT 10MF | 20% | 16V |
| C502 | 1-124-233-00 | ELECT 10MF | 20% | 16V |
| C505 | 1-124-234-00 | ELECT 22MF | 20% | 10V |
| C506 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C507 | 1-163-020-00 | CERAMIC CHIP 0.0082MF | 10% | 50V |
| C508 | 1-124-257-00 | ELECT 2.2MF | 20% | 35V |
| C509 | 1-163-133-00 | CERAMIC CHIP 470PF | 5% | 50V |
| C510 | 1-124-268-00 | ELECT 0.22MF | 20% | 50V |
| C512 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 5% | 50V |
| C513 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 5% | 50V |
| C514 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C515 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C516 | 1-124-287-00 | ELECT 10MF | 20% | 10V |
| C518 | 1-163-075-00 | CERAMIC CHIP 0.047MF | 10% | 25V |
| C519 | 1-124-275-00 | ELECT 2.2MF | 20% | 35V |
| C601 | 1-163-105-00 | CERAMIC CHIP 33PF | 5% | 50V |
| C602 | 1-163-105-00 | CERAMIC CHIP 33PF | 5% | 50V |
| C603 | 1-124-233-00 | ELECT 10MF | 20% | 16V |
| C604 | 1-124-222-00 | ELECT 22MF | 20% | 6.3V |
| C605 | 1-124-234-00 | ELECT 22MF | 20% | 16V |
| C606 | 1-163-127-00 | CERAMIC CHIP 270PF | 5% | 50V |
| C607 | 1-124-233-00 | ELECT 10MF | 20% | 16V |
| C608 | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% | 50V |
| C609 | 1-124-254-00 | ELECT 0.68MF | 20% | 50V |
| C610 | 1-163-077-00 | CERAMIC CHIP 0.1MF | | 50V |
| C611 | 1-163-064-00 | CERAMIC CHIP 0.027MF | 10% | 50V |
| C614 | 1-163-141-00 | CERAMIC CHIP 0.001MF | 10% | 50V |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN501 | *1-564-013-00 | PIN, CONNECTOR 3P | |
| CN502 | *1-564-022-00 | PIN, CONNECTOR 12P | |
| CN503 | *1-564-028-00 | PIN, CONNECTOR 3P | |
| CN505 | *1-564-012-00 | PIN, CONNECTOR 2P | |
| CN506 | *1-562-583-11 | CONNECTOR (FPC & FC) | |
| CN507 | *1-564-014-00 | PIN, CONNECTOR 4P | |
| CN508 | *1-564-014-00 | PIN, CONNECTOR 4P | |

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D501 | 8-719-101-23 | DIODE 1SS123 | |
| D601 | 8-719-200-27 | DIODE E10DS2 | |
| D602 | 8-719-200-27 | DIODE E10DS2 | |
| D603 | 8-719-100-05 | DIODE 1S2837 | |
| D604 | 8-719-100-03 | DIODE 1S2835 | |
| D605 | 8-719-914-11 | DIODE HZ4ALL | |
| D606 | 8-719-100-05 | DIODE 1S2837 | |

IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC501 | 8-759-102-29 | IC CX20115 | |
| IC502 | 8-752-003-50 | IC CX20035 | |
| IC601 | 8-759-922-27 | IC MB88505-342M | |
| IC602 | 8-759-201-80 | IC TC4526BF | |

COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L501 | 1-407-165-XX | MICRO INDUCTOR 47UH | |
| L601 | 1-410-125-11 | COIL, CHOKE 100UH | |
| L602 | 1-408-987-21 | MICRO INDUCTOR 330UH | |

IC LINK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| PS601⚠ | 1-532-685-11 | LINK, IC (ICP-N20) | |
| PS602⚠ | 1-532-637-21 | LINK, IC (ICP-F25) | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q502 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q503 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q504 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q505 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q506 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q507 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q508 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q509 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q510 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q511 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q512 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q513 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q514 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q515 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q517 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q601 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q602 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q603 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q604 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q605 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q606 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q607 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q609 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q610 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q611 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q612 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q613 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q614 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q615 | 8-729-901-05 | TRANSISTOR DTA124EK | |
| Q616 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q617 | 8-729-901-05 | TRANSISTOR DTA124EK | |
| Q618 | 8-729-199-92 | TRANSISTOR 2SD999 | |
| Q619 | 8-729-202-86 | TRANSISTOR 2SA1242LB | |
| Q620 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q621 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q623 | 8-729-100-76 | TRANSISTOR 2SA812 | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q624 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q625 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q626 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q627 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q630 | 8-729-901-06 | TRANSISTOR DTA144EK | |

RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R502 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R503 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R504 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R505 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R507 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R508 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R509 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R510 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R511 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R512 | 1-216-103-00 | METAL CHIP | 180K | 5% | 1/10W | |
| R513 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R514 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W | |
| R515 | 1-216-095-00 | METAL CHIP | 82K | 5% | 1/10W | |
| R516 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R517 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R518 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R519 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R520 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R521 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R522 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R523 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R524 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R525 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R526 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R527 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R528 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R529 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R530 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R531 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R588 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R601 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R602 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R603 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R604 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R605 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R606 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R607 | 1-216-162-00 | METAL CHIP | 33 | 5% | 1/8W | |
| R608 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R609 | 1-216-170-00 | METAL CHIP | 68 | 5% | 1/8W | |
| R610 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R611 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R612 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R613 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R614 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R615 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R616 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R617 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R618 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R619 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R620 | 1-216-087-00 | METAL CHIP | 39K | 5% | 1/10W | |
| R621 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R622 | 1-216-087-00 | METAL CHIP | 39K | 5% | 1/10W | |
| R623 | 1-216-190-00 | METAL CHIP | 470 | 5% | 1/8W | |
| R624 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R625 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R626 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R627 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R628 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R629 | ⚠ 1-216-194-91 | METAL CHIP | 680 | 5% | 1/8W | |
| R630 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R631 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R632 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R635 | 1-216-134-00 | METAL CHIP | 2.2 | 5% | 1/8W | |
| R636 | 1-216-134-00 | METAL CHIP | 2.2 | 5% | 1/8W | |
| R637 | 1-216-134-00 | METAL CHIP | 2.2 | 5% | 1/8W | |
| R638 | 1-216-134-00 | METAL CHIP | 2.2 | 5% | 1/8W | |
| R639 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R640 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R641 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R642 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R643 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R644 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R645 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R646 | ⚠ 1-216-194-91 | METAL CHIP | 680 | 5% | 1/8W | |
| R647 | ⚠ 1-216-194-91 | METAL CHIP | 680 | 5% | 1/8W | |
| R650 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R651 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R652 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R653 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R654 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R655 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R657 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV601 | 1-230-520-11 | RES, ADJ, METAL GLAZE 1K | |

CRYSTAL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| X601 | 1-567-346-11 | OSCILLATOR, CERAMIC 6MHZ | |

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*A-7060-226-A DS-8 BOARD, COMPLETE
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CAPACITOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C601 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V | |
| C602 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V | |
| C603 | 1-124-258-00 | ELECT | 3.3MF | 20% | 25V | |
| C604 | 1-124-258-00 | ELECT | 3.3MF | 20% | 25V | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C605 | 1-163-105-00 | CERAMIC CHIP 33PF | | 5% | 50V |
| C606 | 1-163-105-00 | CERAMIC CHIP 33PF | | 5% | 50V |
| C607 | 1-163-035-00 | CERAMIC CHIP 0.047MF | | | 50V |
| C608 | 1-124-239-00 | ELECT 6.8MF | | 20% | 16V |
| C610 | 1-163-081-00 | CERAMIC CHIP 0.22MF | | | 25V |
| C611 | 1-163-081-00 | CERAMIC CHIP 0.22MF | | | 25V |
| C615 | 1-163-081-00 | CERAMIC CHIP 0.22MF | | | 25V |
| C616 | 1-163-035-00 | CERAMIC CHIP 0.047MF | | | 50V |
| C617 | 1-163-081-00 | CERAMIC CHIP 0.22MF | | | 25V |
| | | **CONNECTOR** | | | |
| CN010 | 1-564-548-11 | PIN, BOARD TO BOARD (L TYPE)5P | | | |
| CN011 | 1-564-549-11 | PIN, BOARD TO BOARD (L TYPE)10P | | | |
| CN012 | 1-564-549-11 | PIN, BOARD TO BOARD (L TYPE)10P | | | |
| | | **DIODE** | | | |
| D601 | 8-719-100-05 | DIODE 1S2837 | | | |
| D602 | 8-719-100-05 | DIODE 1S2837 | | | |
| D603 | 8-719-100-05 | DIODE 1S2837 | | | |
| D604 | 8-719-100-03 | DIODE 1S2835 | | | |
| D605 | 8-719-106-43 | DIODE RD9.1M-B1 | | | |
| D606 | 8-719-105-58 | DIODE RD3.9M-B2 | | | |
| | | **IC** | | | |
| IC601 | 8-759-200-82 | IC TC4069UBF | | | |
| IC602 | 8-759-200-65 | IC TC4013BF | | | |
| IC603 | 8-759-910-84 | IC MB88201-170N | | | |
| IC604 | 8-759-100-93 | IC UPC393G2 | | | |
| | | **COIL** | | | |
| L601 | 1-408-987-21 | MICRO INDUCTOR 330UH | | | |
| | | **TRANSISTOR** | | | |
| Q601 | 8-729-901-06 | TRANSISTOR DTA144EK | | | |
| Q602 | 8-729-901-06 | TRANSISTOR DTA144EK | | | |
| Q603 | 8-729-901-01 | TRANSISTOR DTC144EK | | | |
| Q604 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | |
| Q605 | 8-729 901-01 | TRANSISTOR DTC144EK | | | |
| Q606 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | |
| Q607 | 8-729-901-01 | TRANSISTOR DTC144EK | | | |
| Q608 | 8-729-900-98 | TRANSISTOR DTC143TK | | | |
| Q609 | 8-729-901-01 | TRANSISTOR DTC144EK | | | |
| Q610 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | |
| Q611 | 8-729-901-01 | TRANSISTOR DTC144EK | | | |
| Q612 | 8-729-901-01 | TRANSISTOR DTC144EK | | | |
| Q613 | 8-729-901-01 | TRANSISTOR DTC144EK | | | |
| | | **RESISTOR** | | | |
| R601 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R602 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R603 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R604 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W |
| R605 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R606 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R607 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R608 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W |
| R609 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R610 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R611 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R612 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R613 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R614 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R615 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R616 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R617 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R618 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R619 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R620 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R621 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R622 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R623 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R624 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R625 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R626 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W |
| R627 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R628 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R629 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R630 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W |
| | | **CRYSTAL** | | | |
| X601 | 1-567-143-00 | OSCILLATOR, CERAMIC 6MHz | | | |

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*A-7060-227-A HS-5 BOARD, COMPLETE
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|---|---|---|---|---|
| | | **CAPACITOR** | | |
| C601 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C602 | 1-125-373-11 | DOUBLE LAYERS 22000MF | | 5.5V |
| | | **CONNECTOR** | | |
| CN005 | 1-564-610-21 | CONNECTOR, BOARD TO BOARD | | |
| CN403 | *1-564-027-00 | PIN, CONNECTOR 2P | | |
| CN404 | *1-564-028-00 | PIN, CONNECTOR 3P | | |
| | | **DIODE** | | |
| D602 | 8-719-105-82 | DIODE RD5.1M-B2 | | |
| D603 | 8-719-106-16 | DIODE RD6.8M-B1 | | |
| | | **IC LINK** | | |
| PS601⚠ | 1-532-605-11 | LINK, IC (ICP-N10) | | |
| | | **TRANSISTOR** | | |
| Q601 | 8-729-100-66 | TRANSISTOR 2SC1623 | | |
| Q602 | 8-729-113-33 | TRANSISTOR 2SB733-4 | | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q603 | 8-729-700-08 | TRANSISTOR NJL7141E | |
| Q604 | 8-729-159-64 | TRANSISTOR 2SD596 | |
| Q605 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q607 | 8-729-202-86 | TRANSISTOR 2SA1242LB | |
| Q608 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q609 | 8-729-901-01 | TRANSISTOR DTC144EK | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R601 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R602 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R603 | 1-216-190-00 | METAL CHIP 470 5% 1/8W | |
| R604 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R605 | 1-216-190-00 | METAL CHIP 470 5% 1/8W | |
| R606 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R607 | 1-216-168-00 | METAL CHIP 56 5% 1/8W | |
| R608 | 1-216-168-00 | METAL CHIP 56 5% 1/8W | |
| R609 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R610 | 1-216-061-00 | METAL CHIP 3.3K 5% 1/10W | |
| R612 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R613 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R614 | 1-216-109-00 | METAL CHIP 330K 5% 1/10W | |
| R615 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV601 | 1-230-524-11 | RES, ADJ, METAL GLAZE 22K | |

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*A-7060-221-A RS-5 BOARD, COMPLETE
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*3-686-814-01 HOLDER, REEL SENSOR

CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C501 | 1-124-234-00 | ELECT 22MF 20% 10V | |
| C601 | 1-124-225-00 | ELECT 100MF 20% 6.3V | |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN515 | *1-564-012-00 | PIN, CONNECTOR 2P | |
| CN516 | *1-564-012-00 | PIN, CONNECTOR 2P | |

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D501 | 8-719-100-03 | DIODE 1S2835 | |
| D502 | 8-719-100-03 | DIODE 1S2835 | |
| D503 | 8-719-100-03 | DIODE 1S2835 | |

IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC501 | 8-759-910-70 | IC MB3763PS | |
| IC502 | 8-759-908-81 | IC MB3763PF | |

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| PH601 | 8-719-751-42 | DIODE NJL5141E | |
| PH602 | 8-719-751-42 | DIODE NJL5141E | |
| PH603 | 8-719-751-42 | DIODE NJL5141E | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q601 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q602 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q603 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q604 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q605 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q606 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q607 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R601 | 1-216-180-00 | METAL CHIP 180 5% 1/8W | |
| R602 | 1-216-180-00 | METAL CHIP 180 5% 1/8W | |
| R603 | 1-216-160-00 | METAL CHIP 27 5% 1/8W | |
| R604 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R605 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R606 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R607 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R608 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R609 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R610 | 1-216-071-00 | METAL CHIP 8.2K 5% 1/10W | |
| R611 | 1-216-067-00 | METAL CHIP 5.6K 5% 1/10W | |
| R612 | 1-216-071-00 | METAL CHIP 8.2K 5% 1/10W | |
| R613 | 1-216-067-00 | METAL CHIP 5.6K 5% 1/10W | |
| R614 | 1-216-071-00 | METAL CHIP 8.2K 5% 1/10W | |
| R615 | 1-216-067-00 | METAL CHIP 5.6K 5% 1/10W | |
| R616 | 1-216-180-00 | METAL CHIP 180 5% 1/8W | |

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*A-7060-222-A FE-4 BOARD, COMPLETE
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CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C101 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C102 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C103 | 1-163-111-00 | CERAMIC CHIP 56PF 5% 50V | |
| C104 | 1-163-119-00 | CERAMIC CHIP 120PF 5% 50V | |
| C105 | 1-163-021-00 | CERAMIC CHIP 0.01MF 50V | |
| C106 | 1-163-034-00 | CERAMIC CHIP 0.033MF 50V | |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN113 | *1-564-002-00 | PIN, CONNECTOR 3P | |

COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L101 | 1-408-969-21 | MICRO INDUCTOR 8.2UH | |
| L102 | ⚠ 1-408-948-21 | MICRO INDUCTOR 220UH | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q101 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q102 | 8-729-117-54 | TRANSISTOR 2SA1175 | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

## RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R101 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R102 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R103 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R104 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R105 | 1-216-308-00 | METAL CHIP | 4.7 | 5% | 1/10W | |

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### *A-7060-229-A ZM-4 BOARD, COMPLETE

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## CAPACITOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C702 | 1-124-604-00 | ELECT | 330MF | 20% | 10V | |
| C703 | 1-123-822-00 | ELECT | 47MF | 20% | 10V | |
| C704 | 1-123-645-00 | ELECT | 33MF | 20% | 10V | |
| C705 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C706 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C707 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C708 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C709 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C710 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |

## CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN711 | *1-564-001-11 | PIN, CONNECTOR 2P | |
| CN712 | *1-564-002-00 | PIN, CONNECTOR 3P | |
| CN713 | *1-564-001-11 | PIN, CONNECTOR 2P | |
| CN714 | *1-564-002-00 | PIN, CONNECTOR 3P | |
| CN715 | *1-564-008-00 | PIN, CONNECTOR 9P | |
| CN716 | *1-564-003-00 | PIN, CONNECTOR 4P | |
| CN717 | *1-564-003-00 | PIN, CONNECTOR 4P | |

## COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L701 | 1-407-718-00 | MICRO INDUCTOR 1.2MMH | |

## IC LINK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| PS701 | ⚠1-532-637-11 | LINK, IC (ICP-N25) | |

## TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q701 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q702 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q703 | 8-729-103-72 | TRANSISTOR 2SD1005 | |
| Q704 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q705 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

## RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R701 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R702 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R703 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R704 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R705 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R706 | 1-216-158-00 | METAL CHIP | 22 | 5% | 1/8W | |
| R707 | 1-216-158-00 | METAL CHIP | 22 | 5% | 1/8W | |
| R709 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R710 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R711 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R712 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R713 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R714 | 1-247-210-00 | CARBON | 56 | 5% | 1/2W | |
| R715 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |

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### *A-7060-231-A RR-12 BOARD, COMPLETE

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## CAPACITOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C751 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C752 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C753 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C754 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C755 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C756 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C757 | 1-124-229-00 | ELECT | 33MF | 20% | 6.3V | |
| C758 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |
| C759 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V | |

## DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D751 | 8-719-918-67 | DIODE GL-1EG102 | |

## RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R751 | 1-246-993-00 | CARBON | 470 | 5% | 1/8W | F |
| R752 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R754 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R756 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |

## SWITCH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| S751 | 1-554-973-11 | SWITCH, SLIDE | |
| S752 | 1-554-174-00 | SWITCH, KEY BOARD | |
| S753 | 1-554-364-00 | SWITCH, SLIDE | |
| S754 | 1-554-945-12 | SWITCH, SLIDE | |
| S755 | 1-553-977-00 | SWITCH, SLIDE | |
| S756 | 1-554-541-12 | SWITCH, TACT | |

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### *A-7060-230-A MA-14 BOARD, COMPLETE

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## CAPACITOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C401 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V | |
| C402 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V | |
| C403 | 1-131-401-00 | TANTALUM | 0.068MF | 20% | 35V | |
| C404 | 1-131-401-00 | TANTALUM | 0.068MF | 20% | 35V | |
| C406 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V | |
| C408 | 1-124-245-00 | ELECT | 4.7MF | 20% | 35V | |
| C409 | 1-124-224-00 | ELECT | 47MF | 20% | 6.3V | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C410 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% | 50V |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN013 | *1-564-878-11 | PIN, BOARD TO BOARD(L TYPE) 4P | |
| CN406 | *1-564-014-00 | PIN, CONNECTOR 4P | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q401 | 8-729-162-44 | TRANSISTOR 2SB624-BV4 | |
| Q402 | 8-729-271-23 | TRANSISTOR 2SC2712 | |
| Q403 | 8-729-271-23 | TRANSISTOR 2SC2712 | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R401 | 1-216-071-00 | METAL CHIP 8.2K 5% 1/10W | |
| R402 | 1-216-067-00 | METAL CHIP 5.6K 5% 1/10W | |
| R403 | 1-216-162-00 | METAL CHIP 33 5% 1/8W | |
| R404 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R405 | 1-216-069-00 | METAL CHIP 6.8K 5% 1/10W | |
| R406 | 1-216-079-00 | METAL CHIP 18K 5% 1/10W | |
| R408 | 1-216-035-00 | METAL CHIP 270 5% 1/10W | |
| R409 | 1-216-079-00 | METAL CHIP 18K 5% 1/10W | |
| R410 | 1-216-075-00 | METAL CHIP 12K 5% 1/10W | |
| R411 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R412 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |
| R413 | 1-216-037-00 | METAL CHIP 330 5% 1/10W | |

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*1-616-645-11 MJ-9 BOARD
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DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D401 | 8-719-106-17 | DIODE RD6.8M-B2 | |

JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J401 | 1-507-957-11 | JACK (2 GANG) | |

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*A-7070-024-A LD-1 BOARD, COMPLETE
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DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D901 | 8-719-928-54 | DIODE GL-450S | |

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MS-4 BOARD
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CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C901 | 1-163-038-00 | CERAMIC CHIP 0.1MF | 25V |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN905 | *1-564-613-11 | PIN, CONNECTOR (HOOK TYPE) | |

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LS-9 BOARD
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CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN904 | *1-564-613-21 | PIN, CONNECTOR (HOOK TYPE) | |

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*1-613-579-12 EP-2 BOARD
***********

JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J491 | 1-507-921-00 | JACK | |

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*1-613-581-13 FU-34 BOARD
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*1-533-146-00 HOLDER, FUSE

FUSE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| F901 | ⚠1-532-237-11 | FUSE, TIME-LAG 3.15A 250V | |

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*1-613-580-11 EF-3 BOARD
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CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C772 | 1-161-039-00 | CERAMIC 0.001MF 10% 25V | |
| C773 | 1-161-039-00 | CERAMIC 0.001MF 10% 25V | |
| C774 | 1-161-013-00 | CERAMIC 0.01MF 10% 25V | |
| C775 | 1-161-039-00 | CERAMIC 0.001MF 10% 25V | |
| C776 | 1-161-039-00 | CERAMIC 0.001MF 10% 25V | |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN772 | 1-562-183-00 | SOCKET 8P | |

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*A-7060-204-A AZ-2 BOARD, COMPLETE
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A complete AZ-2 board is stocked with a complete PA-7 board as a gang for repair parts. They can not be ordered individually.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

### CAPACITOR

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C020 | 1-123-622-00 | ELECT | 22MF | 20% | 16V |
| C021 | 1-123-611-00 | ELECT | 1MF | 20% | 50V |
| C022 | 1-123-616-00 | ELECT | 4.7MF | 20% | 25V |
| C023 | 1-123-616-00 | ELECT | 4.7MF | 20% | 25V |
| C024 | 1-123-821-00 | ELECT | 47MF | 20% | 16V |
| C025 | 1-124-472-11 | ELECT | 470MF | 20% | 10V |
| C026 | 1-124-290-00 | ELECT | 47MF | 20% | 10V |
| C027 | 1-124-444-00 | ELECT | 220MF | 20% | 10V |
| C028 | 1-124-363-00 | ELECT | 330MF | 20% | 10V |
| C029 | 1-163-145-00 | CERAMIC CHIP | 0.0015MF | 10% | 50V |
| C030 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C031 | 1-163-104-00 | CERAMIC CHIP | 30PF | 5% | 50V |
| C032 | 1-163-104-00 | CERAMIC CHIP | 30PF | 5% | 50V |
| C033 | 1-123-622-00 | ELECT | 22MF | 20% | 16V |
| C034 | 1-123-821-00 | ELECT | 47MF | 20% | 16V |
| C035 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |

### CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN002 | *1-564-012-00 | PIN, CONNECTOR 2P | |
| CN003 | *1-564-001-11 | PIN, CONNECTOR 2P | |
| CN004 | *1-564-001-11 | PIN, CONNECTOR 2P | |
| CN005 | *1-564-001-11 | PIN, CONNECTOR 2P | |

### DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D001 | 8-719-100-23 | DIODE RD4.3E-B2 | |
| D002 | 8-719-101-36 | DIODE RD3.3E-L1 | |
| D003 | 8-719-101-61 | DIODE RD6.2E-L2 | |
| D004 | 8-719-101-61 | DIODE RD6.2E-L2 | |
| D010 | 8-719-815-55 | DIODE 1S1555 | |
| D011 | 8-719-815-55 | DIODE 1S1555 | |
| D012 | 8-719-815-55 | DIODE 1S1555 | |

### IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC010 | 9-986-323-01 | IC IR9331 | |
| IC011 | 8-759-100-95 | IC UPC324G2 | |
| IC012 | 9-986-324-01 | IC UPD49G834 | |

### IC LINK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| PS001⚠ | 1-532-727-11 | LINK, IC (ICP-N5) | |

### TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q010 | 8-729-109-44 | TRANSISTOR 2SK94 | |
| Q011 | 8-729-109-44 | TRANSISTOR 2SK94 | |
| Q012 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q013 | 8-729-101-07 | TRANSISTOR 2SB798 | |
| Q014 | 8-729-101-07 | TRANSISTOR 2SB798 | |
| Q015 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q016 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q017 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q018 | 8-729-101-07 | TRANSISTOR 2SB798 | |
| Q019 | 8-729-101-07 | TRANSISTOR 2SB798 | |
| Q020 | 8-729-199-92 | TRANSISTOR 2SD999 | |
| Q021 | 8-729-199-92 | TRANSISTOR 2SD999 | |
| Q022 | 8-729-101-07 | TRANSISTOR 2SB798 | |
| Q023 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q024 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q025 | 8-729-199-92 | TRANSISTOR 2SD999 | |
| Q026 | 8-729-199-92 | TRANSISTOR 2SD999 | |
| Q027 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q028 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

### RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R050 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R051 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R052 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R053 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R054 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R055 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R056 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R057 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R058 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R059 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R060 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R061 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R062 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R063 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R064 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R066 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R067 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R068 | 1-216-329-11 | METAL CHIP | 5.1K | 1% | 1/10W | |
| R069 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R070 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R071 | 1-247-125-00 | CARBON | 560 | 5% | 1/4W | |
| R072 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R073 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R074 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R075 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R076 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R077 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R078 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R079 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R080 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R081 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R082 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R083 | 1-247-688-11 | CARBON | 10 | 5% | 1/4W | |
| R084 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R085 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R086 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R087 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R088 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R089 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R090 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R091 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R092 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R093 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R094 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R095 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R096 | 1-246-412-15 | CARBON | 3 | 5% | 1/4W | |
| R097 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R099 | 1-247-085-00 | CARBON | 12 | 5% | 1/4W | |
| R100 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R101 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R102 | 1-247-702-11 | CARBON | 150 | 5% | 1/4W | |
| R103 | 1-247-767-00 | CARBON | 2.2 | 5% | 1/6W | |

### THERMISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| THP001 ⚠ | 1-806-887-11 | THERMISTOR (POSITIVE) 15 | |

### VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV010 | 1-228-891-00 | RES, ADJ, METAL GLAZE 10K | |
| RV011 | 1-228-891-00 | RES, ADJ, METAL GLAZE 10K | |

### CRYSTAL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| X001 | 1-567-143-00 | OSCILLATOR, CERAMIC | |

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*A-7060-204-A PA-7 BOARD, COMPLETE
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A complete PA-7 board is stocked with a complete AZ-2 board as a gang for repair parts. They can not be ordered individually.

### CAPACITOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C001 | 1-124-290-00 | ELECT | 47MF | 20% | 10V | |
| C002 | 1-124-290-00 | ELECT | 47MF | 20% | 10V | |
| C003 | 1-123-617-00 | ELECT | 10MF | 20% | 16V | |
| C004 | 1-163-089-00 | CERAMIC CHIP | 6PF | 0.25PF | 50V | |
| C005 | 1-163-089-00 | CERAMIC CHIP | 6PF | 0.25PF | 50V | |
| C006 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V | |
| C007 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V | |
| C008 | 1-163-145-00 | CERAMIC CHIP | 0.0015MF | 10% | 50V | |
| C009 | 1-163-005-00 | CERAMIC CHIP | 470PF | 10% | 50V | |
| C010 | 1-163-034-00 | CERAMIC CHIP | 0.033MF | | 50V | |
| C011 | 1-163-145-00 | CERAMIC CHIP | 0.0015MF | 10% | 50V | |
| C012 | 1-163-005-00 | CERAMIC CHIP | 470PF | 10% | 50V | |
| C013 | 1-163-034-00 | CERAMIC CHIP | 0.033MF | | 50V | |
| C014 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V | |
| C015 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V | |
| C016 | 1-123-617-00 | ELECT | 10MF | 20% | 16V | |
| C017 | 1-123-617-00 | ELECT | 10MF | 20% | 16V | |

### DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D001 | 8-719-815-55 | DIODE 1S1555 | |

### IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC001 | 8-759-100-95 | IC UPC324G2 | |
| IC002 | 8-759-100-95 | IC UPC324G2 | |

### TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q001 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q002 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q003 | 8-729-109-46 | TRANSISTOR 2SK94 | |
| Q004 | 8-729-109-46 | TRANSISTOR 2SK94 | |
| Q005 | 8-729-109-46 | TRANSISTOR 2SK94 | |
| Q006 | 8-729-109-46 | TRANSISTOR 2SK94 | |

### RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R001 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R002 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R003 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R004 | 1-216-109-00 | METAL CHIP | 330K | 5% | 1/10W | |
| R005 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R006 | 1-216-109-00 | METAL CHIP | 330K | 5% | 1/10W | |
| R007 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R008 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R009 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R010 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R011 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R012 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W | |
| R013 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R014 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R015 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W | |
| R016 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R017 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R018 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R019 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R020 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R021 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R022 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R023 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R024 | 1-216-029-00 | METAL CHIP | 150 | 5% | 1/10W | |
| R025 | 1-247-879-00 | CARBON | 100K | 5% | 1/6W | |
| R026 | 1-247-879-00 | CARBON | 100K | 5% | 1/6W | |
| R028 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R029 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R030 | 1-216-084-00 | METAL CHIP | 30K | 5% | 1/10W | |
| R031 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R032 | 1-216-115-00 | METAL CHIP | 560K | 5% | 1/10W | |
| R033 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R034 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R035 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R036 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R037 | 1-216-084-00 | METAL CHIP | 30K | 5% | 1/10W | |
| R038 | 1-216-115-00 | METAL CHIP | 560K | 5% | 1/10W | |
| R039 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R040 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R041 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R042 | 1-216-029-00 | METAL CHIP | 150 | 5% | 1/10W | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R043 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R044 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |

VARIABLE RESISTOR

| | | | | | |
|---|---|---|---|---|---|
| RV001 | 1-228-895-00 | RES, ADJ, METAL GLAZE 100K | | | |
| RV002 | 1-228-895-00 | RES, ADJ, METAL GLAZE 100K | | | |

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*1-616-648-11 SS-57 BOARD
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SWITCH

| | | |
|---|---|---|
| S702 | 1-553-349-00 | SWITCH, PUSH |

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*1-616-649-11 SS-58 BOARD
*************

SWITCH

| | | |
|---|---|---|
| S703 | 1-553-349-00 | SWITCH, PUSH |

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*A-7060-103-A VF-4 BOARD, COMPLETE
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| | | |
|---|---|---|
| | 1-526-793-21 | SOCKET ASSY, CRT |
| | *3-662-075-00 | COVER, CONTROL |

CAPACITOR

| | | | | | |
|---|---|---|---|---|---|
| C001 | 1-124-229-00 | ELECT | 33MF | 20% | 10V |
| C002 | 1-163-209-00 | CERAMIC CHIP | 0.0015MF | 5% | 50V |
| C003 | 1-124-255-00 | ELECT | 1MF | 20% | 50V |
| C004 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C005 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C006 | 1-163-131-00 | CERAMIC CHIP | 390PF | 10% | 50V |
| C007 | 1-163-023-00 | CERAMIC CHIP | 0.015MF | 10% | 50V |
| C008 | 1-163-023-00 | CERAMIC CHIP | 0.015MF | 10% | 50V |
| C009 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C010 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C011 | 1-131-361-00 | TANTALUM | 2.2MF | 10% | 20V |
| C012 | 1-163-209-00 | CERAMIC CHIP | 0.0015MF | 5% | 50V |
| C013 | 1-163-137-00 | CERAMIC CHIP | 680PF | 10% | 50V |
| C014 | 1-124-604-00 | ELECT | 330MF | 20% | 10V |
| C015 | 1-124-471-00 | ELECT | 1000MF | 20% | 6.3V |
| C016 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | 10% | 50V |
| C017 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C018 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C019 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C020 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C021 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C022 | 1-163-005-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C023 | 1-124-140-00 | ELECT | 220MF | 20% | 6.3V |

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C024 | 1-124-604-00 | ELECT | 330MF | 20% | 10V |
| C025 | 1-124-255-00 | ELECT | 1MF | 20% | 50V |
| C026 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C027 | 1-163-018-00 | CERAMIC CHIP | 0.0056MF | 10% | 50V |
| C028 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C029 | 1-163-013-00 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C030 | 1-163-015-00 | CERAMIC CHIP | 0.0033MF | 10% | 50V |
| C031 | 1-102-038-00 | CERAMIC | 0.001MF | 99% | 500V |
| C033 | 1-102-038-00 | CERAMIC | 0.001MF | 99% | 500V |
| C034 | 1-163-023-00 | CERAMIC CHIP | 0.015MF | 10% | 50V |
| C036 | 1-123-619-00 | ELECT | 4.7MF | 20% | 50V |
| C043 | 1-124-255-00 | ELECT | 1MF | 20% | 50V |
| C044 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |

CONNECTOR

| | | |
|---|---|---|
| CN001 | *1-564-269-00 | PIN, CONNECTOR 3P |
| CN002 | *1-564-269-00 | PIN, CONNECTOR 3P |
| CN003 | *1-564-002-00 | PIN, CONNECTOR 3P |

DIODE

| | | |
|---|---|---|
| D001 | 8-719-101-23 | DIODE 1SS123 |
| D002 | 8-719-101-23 | DIODE 1SS123 |
| D003 | 8-719-100-03 | DIODE 1S2835 |
| D004 | 8-719-105-90 | DIODE RD5.6M-B1 |
| D006 | 8-719-904-05 | DIODE 1N4005 |
| D007 | 8-719-904-05 | DIODE 1N4005 |
| D008 | 8-719-904-05 | DIODE 1N4005 |
| D012 | 8-719-101-23 | DIODE 1SS123 |
| D013 | 8-719-100-03 | DIODE 1S2835 |

IC

| | | |
|---|---|---|
| IC001 | 8-759-314-41 | IC HA11441 |

COIL

| | | |
|---|---|---|
| L001 | 1-407-167-XX | MICRO INDUCTOR 68UH |
| L002 | 1-459-549-11 | COIL, FERRITE (HLC) |
| L003 | 1-408-970-21 | MICRO INDUCTOR 10UH |

TRANSISTOR

| | | |
|---|---|---|
| Q001 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q002 | 8-729-600-18 | TRANSISTOR 2SC633-SP8 |
| Q003 | 8-729-100-76 | TRANSISTOR 2SA812 |
| Q004 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q005 | 8-729-216-32 | TRANSISTOR 2SA1163 |
| Q006 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q007 | 8-729-100-76 | TRANSISTOR 2SA812 |
| Q008 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q009 | 8-729-805-13 | TRANSISTOR 2SC1475-13 |
| Q010 | ⚠8-729-100-66 | TRANSISTOR 2SC1623 |

RESISTOR

| | | | | | |
|---|---|---|---|---|---|
| R001 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10 |
| R002 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10 |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R003 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R004 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R005 | 1-216-107-00 | METAL CHIP | 270K | 5% | 1/10W | |
| R006 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R007 | 1-216-001-00 | METAL CHIP | 10 | 5% | 1/10W | |
| R008 | ⚠.1-216-025-91 | METAL CHIP | 100 | 5% | 1/10W | |
| R009 | 1-216-031-00 | METAL CHIP | 180 | 5% | 1/10W | |
| R010 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R011 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R012 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R013 | 1-216-087-00 | METAL CHIP | 39K | 5% | 1/10W | |
| R014 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R015 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R016 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R017 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R018 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R020 | 1-216-001-00 | METAL CHIP | 10 | 5% | 1/10W | |
| R021 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R022 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R023 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R024 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R025 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R026 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R027 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R028 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R029 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R030 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R031 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R032 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R033 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R034 | 1-216-107-00 | METAL CHIP | 270K | 5% | 1/10W | |
| R035 | 1-216-131-11 | METAL CHIP | 2.7M | 5% | 1/10W | |
| R036 | 1-216-131-11 | METAL CHIP | 2.7M | 5% | 1/10W | |
| R037 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W | |
| R038 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R039 | 1-216-019-00 | METAL CHIP | 56 | 5% | 1/10W | |
| R040 | ⚠.1-216-015-91 | METAL CHIP | 39 | 5% | 1/10W | |
| R041 | ⚠.1-216-298-91 | METAL CHIP | 2.2 | 5% | 1/10W | |
| R042 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R046 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R049 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R050 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R051 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R053 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R055 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R056 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R060 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R061 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R063 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R065 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R066 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R070 | 1-216-103-00 | METAL CHIP | 180K | 5% | 1/10W | |
| R071 | 1-216-117-00 | METAL CHIP | 580K | 5% | 1/10W | |
| R072 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV001 | 1-226-703-00 | RES, ADJ, METAL GLAZE 10K | |
| RV002 | 1-226-702-00 | RES, ADJ, METAL GLAZE 2.2K | |
| RV003 | 1-226-772-00 | RES, ADJ, METAL GLAZE 4.7K | |
| RV004 | 1-226-774-00 | RES, ADJ, METAL GLAZE 47K | |
| RV005 | 1-228-762-00 | RES, ADJ, METAL GLAZE 1M | |
| RV006 | 1-230-041-00 | RES, ADJ, METAL GLAZE 2.2M | |

TRANSFORMER

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| T001 | ⚠.1-439-342-21 | TRANSFORMER ASSY, FLYBACK | |

**************************************************************

*1-614-872-11 TL-16 BOARD
************

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D009 | 8-719-812-44 | DIODE TLO124 | |
| D010 | 8-719-812-31 | DIODE TLR123 | |
| D011 | 8-719-812-42 | DIODE TLY124 | |

**************************************************************

*1-614-871-11 TL-15 BOARD
************

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D005 | 8-719-800-24 | DIODE TLR147 | |

**************************************************************

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

## MISCELLANEOUS
*************

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | A-7040-003-A | M-SW ASSY | |
| | X-3686-549-1 | L-SW ASSY | |
| | 1-535-535-11 | TERMINAL, SHAFT GROUND | |
| | 8-750-010-23 | CCD IMAGER BLOCK (IU021-K1AA) | |
| | 8-810-510-90 | MICROPHONE ASSY, BUILT-IN (C-2008) | |
| C902 | 1-161-057-11 | CAP, CERAMIC 0.033MF | |
| CNP772 | 1-556-824-31 | CORD, CONNECTION (WITH PLUG) 8P | |
| DR901 ⚠ | 1-464-376-21 | CONVERTER, DC-DC | |
| DR902 ⚠ | 1-464-377-21 | CONVERTER, DC-DC (CAMERA) | |
| L901 ⚠ | 1-451-251-21 | DEFLECTION YOKE (MONOCHROME) | |
| M901 ⚠ | A-7040-009-A | MOTOR ASSY, L (LOADING) | |
| M902 | 8-838-077-01 | MOTOR, DC (BHF-2800B) (CAPSTAN) | |
| M903 ⚠ | 8-835-110-01 | MOTOR, DC (DNR-5301A) (CONTROL) | |
| M906 ⚠ | 8-835-127-01 | F MOTOR (DNR-6300D) (FOCUS) | |
| PM901 ⚠ | 1-454-377-11 | SOLENOID, PLUNGER | |
| S901 | 1-553-226-00 | SWITCH, LEAF (CASSETTE LOCK) | |
| S902 | 1-554-942-11 | SWITCH, PUSH (RECOG) | |
| S904 | 1-554-944-11 | SWITCH, PUSH (ZOOM) | |
| V901 ⚠ | 1-546-051-11 | CATHODE-RAY TUBE, B/W (CIM30P4) | |

*******************************************************************

## ACCESSORIES AND PAKING MATERIALS
*********************************

| Part No. | Description | Remark |
|---|---|---|
| 3-686-846-02 | BELT, SHOULDER | |
| *3-696-041-11 | INDIVIDUAL CARTON | |
| *3-696-031-01 | CUSHION (UPPER) | |
| *3-696-032-01 | CUSHION (LOWER) | |
| 3-760-728-11 | MANUAL, INSTRUCTION | |
| 3-760-728-41 | MANUAL, INSTRUCTION(AEP,WG MODEL) | |
| 3-760-728-51 | MANUAL, INSTRUCTION(AEP,WG MODEL) | |

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The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

# SECTION 7
# ADJUSTMENT

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# 1. CAMERA SECTION ADJUSTMENT

## 1-1. LIST OF SERVICING JIGS

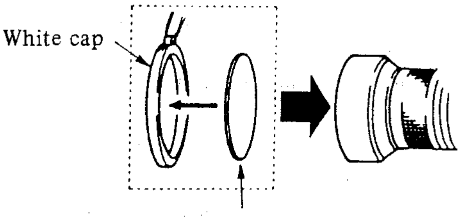
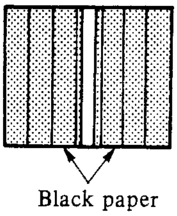
| Ref No. | Name | Part Code | Use |
|---|---|---|---|
| J-1 | Filter (W14) | J-6080-830-A | R Gain, B Gain Adjustment |
| | Filter (C22) | J-6080-829-A | R Gain, B Gain Adjustment |
| | Filter (For fine weather) | J-6080-058-A | MR2, MB2 Adjustment |
| J-2 | ND Filter 0.4 | J-6080-806-A | IRIS Adjustment |
| | ND Filter 0.1 | J-6080-807-A | LX Adjustment, IRIS Adjustment |
| | ND Filter 1.0 | J-6080-808-A | LX Adjustment, MAX Gain Adjustment |
| | ND Filter 0.9 | J-6080-833-A | MAX Gain Adjustment |
| J-3 | Pattern box PTB-100 | J-6020-490-A | |
| J-4 | Pattern box colour chart | J-6020-250-A | |
| J-5 | Camera block fixing jig | J-6080-849-A | |
| J-6 | Extension cord A (8p) | J-6080-819-A | |
| | Extension cord B (9p) | J-6080-821-A | |
| | Make the following jigs by yourself.<br>(1) Black cap<br><br> | | G Pedestal Adjustment (1), (2)<br>R. B Pedestal Adjustment<br>MPX Adjustment, Carrier Balance Adjustment<br>Setup Adjustment |
| | (2) High brightness pattern<br><br> <br>Cover with black paper except 1/2 of the white width of the J-4 colour bar chart. Then photograph with a standard picture frame. | | White Clip Adjustment (2) |

*Fig. 1-1*

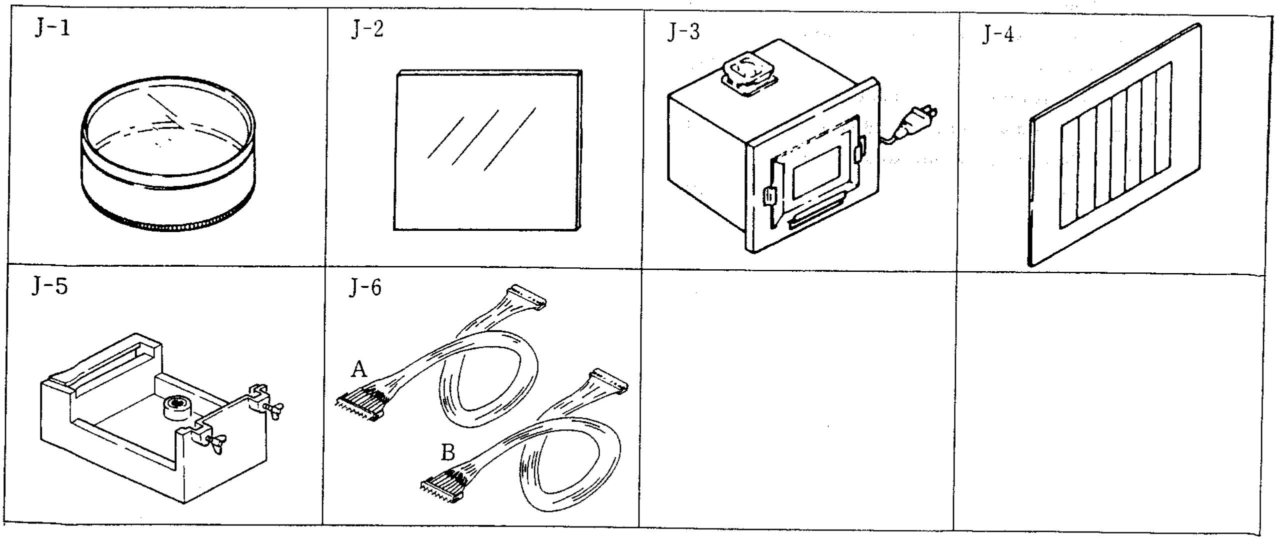


*Fig. 1-2*

### 1-2. PREPARATION

See 2. **DISASSEMBLY** to remove cabinets and boards.

1) Set the white balance switch to ☼ (indoor) when not specified.
2) Set the focus switch to auto when not specified.
3) Change the entire monitor screen to white for the all-white pattern. (Remove the colour bar chart from the pattern box and rotate the zoom ring fully to the TELE side.

### 1-3. SETUP AND CONNECTION DIAGRAM

1) Attach extension cord (9P) to CN715 (white) of ZM-4 board.
2) Attach extension cord (8P) to CN705 (red) of ME-2 board.
3) Set to fixed jig the Ⓐ part of camera block section. (Fig. 1-3 a)
4) After setting the fixed jig of the camera block section, tighten with butterfly nut. (Fig. 1-3 b)
5) Set up the camera block and pattern box as shown in Fig. 1-4.
6) Protect and secure with insulating tape, etc. the leading through section of the RR-12 board.

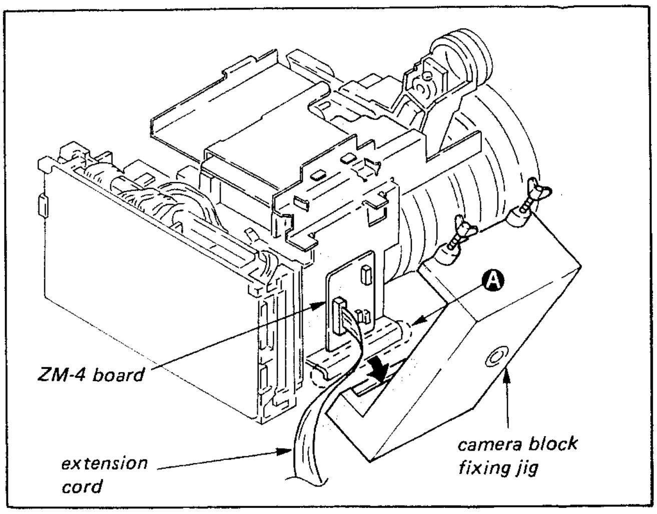

Ⓐ
ZM-4 board
extension cord
camera block fixing jig

*Fig. 1-3(a)*

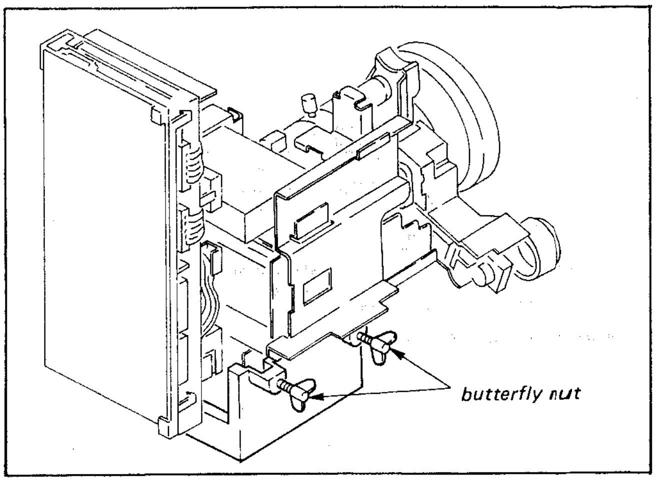

butterfly nut

*Fig. 1-3(b)*

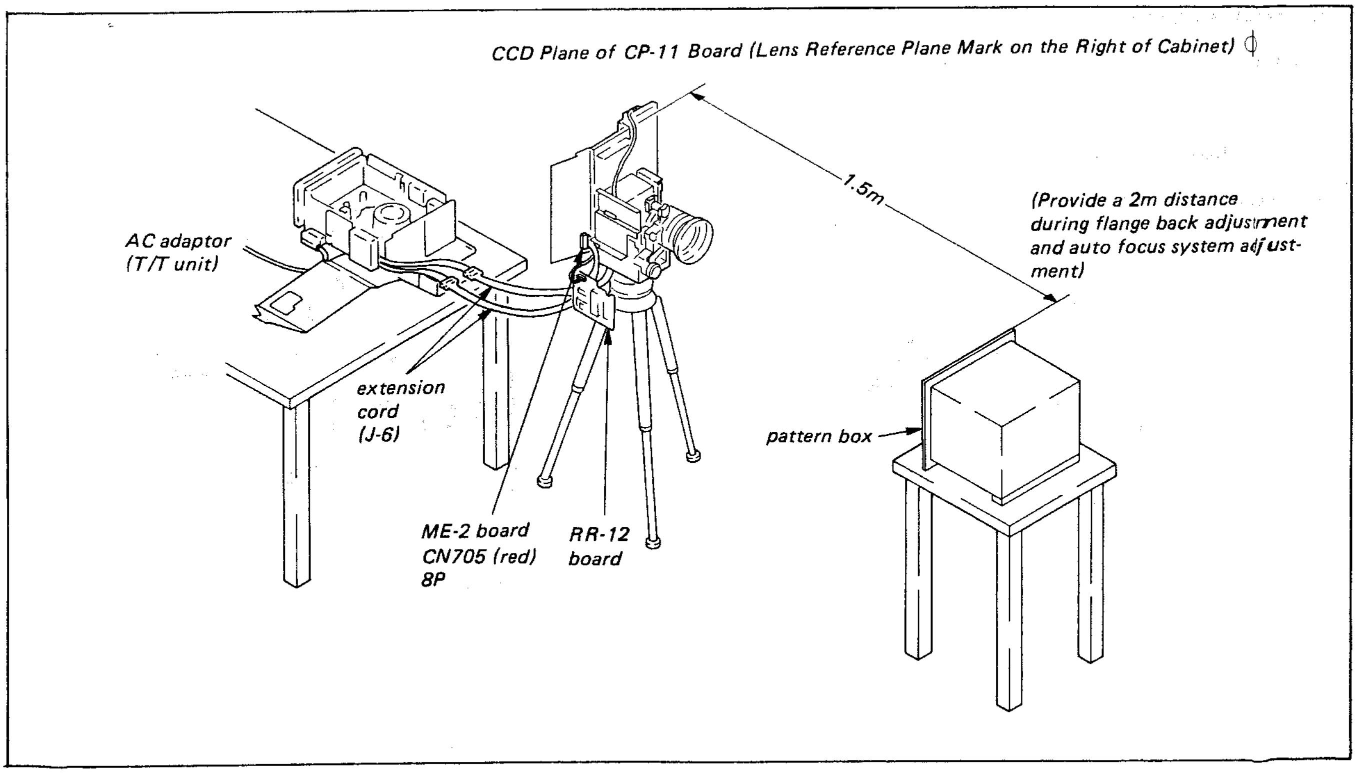

CCD Plane of CP-11 Board (Lens Reference Plane Mark on the Right of Cabinet) ⌽
1.5m
(Provide a 2m distance during flange back adjustment and auto focus system adjustment)
AC adaptor (T/T unit)
extension cord (J-6)
ME-2 board CN705 (red) 8P
RR-12 board
pattern box

*Fig. 1-4*

3) Use a pan head as shown in Fig. 1-5 when setting up the camera block on a desk.

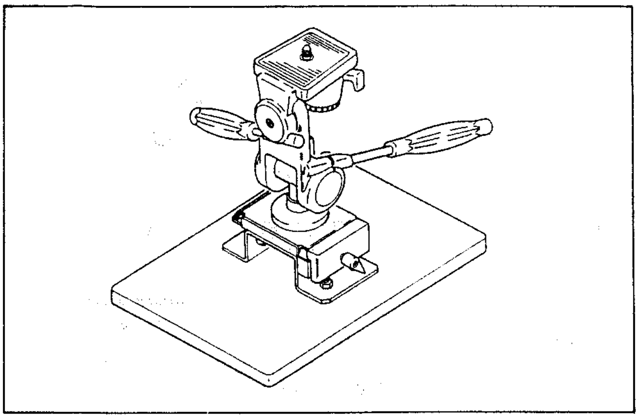
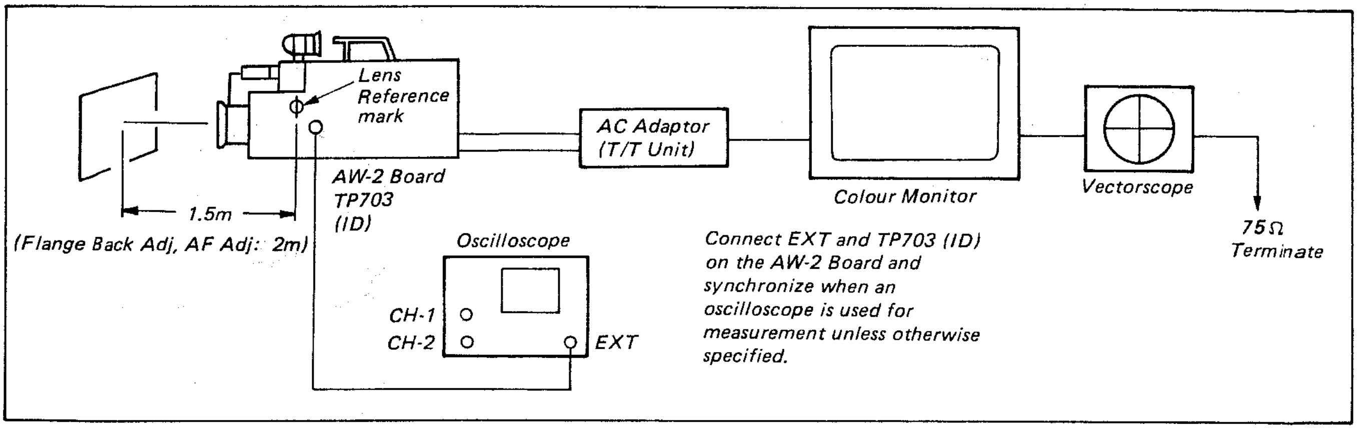


Fig. 1-5

4) Connection Diagram


Lens
Reference
mark
1.5m
(Flange Back Adj, AF Adj: 2m)
AW-2 Board
TP703
(ID)
AC Adaptor
(T/T Unit)
Colour Monitor
Vectorscope
75Ω
Terminate
Oscilloscope
CH-1
CH-2
EXT

Connect EXT and TP703 (ID) on the AW-2 Board and synchronize when an oscilloscope is used for measurement unless otherwise specified.

Fig. 1-6

## 1-4. PRECAUTIONS

1) Adjust the picture frame as shown in Fig. 1-7 when using a colour bar chart for adjustment. (Standard picture frame)
2) See **2. DISASSEMBLY** to remove cabinets and boards.

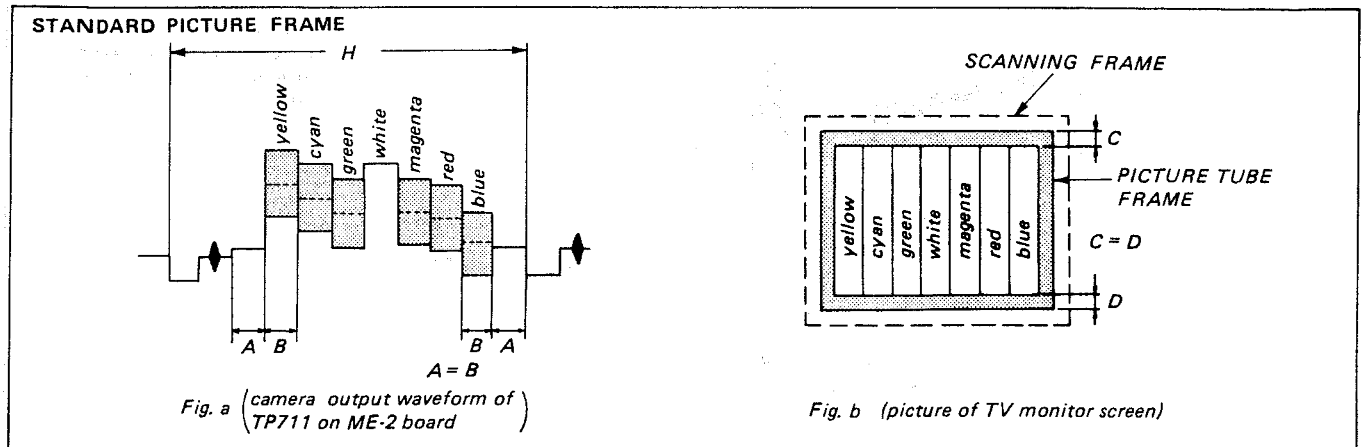

STANDARD PICTURE FRAME
H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B
SCANNING FRAME
C
PICTURE TUBE FRAME
C = D
D

Fig. a (camera output waveform of TP711 on ME-2 board)

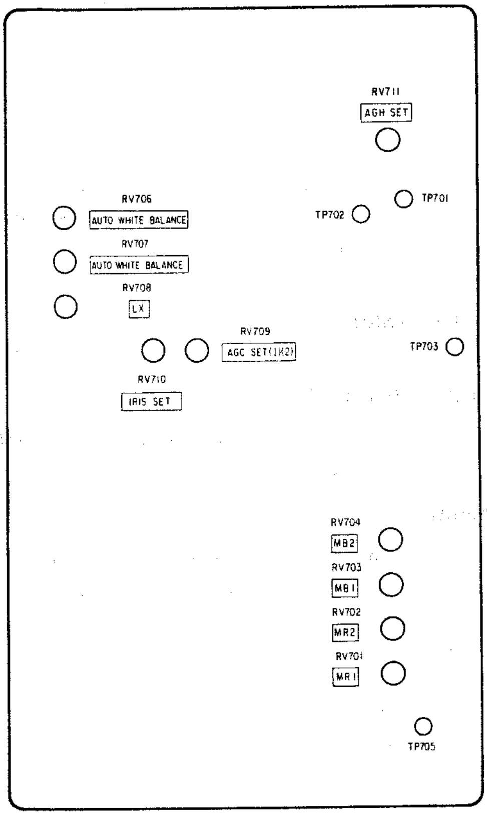
Fig. b (picture of TV monitor screen)

Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

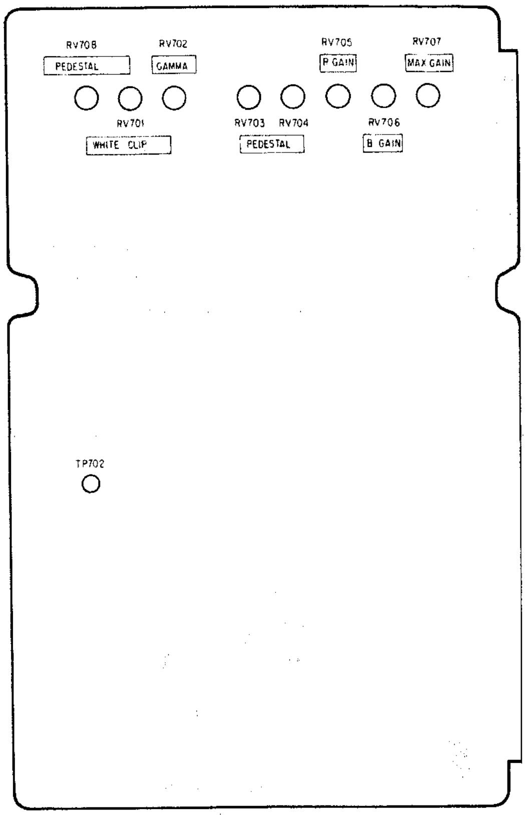
Fig. 1-7

## 1-5. RV AND TP LOCATION

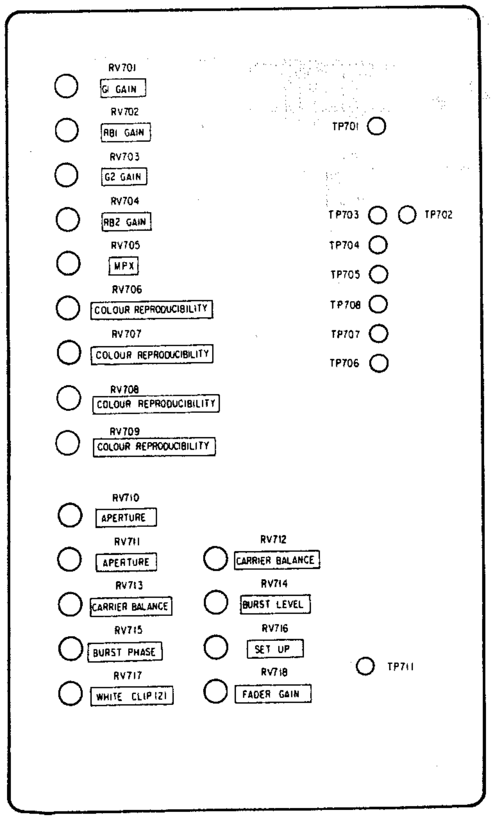
**AW-2** BOARD (Component Side)


RV711
AGH SET
TP701
TP702
RV706
AUTO WHITE BALANCE
RV707
AUTO WHITE BALANCE
RV708
LX
RV709
AGC SET(1)(2)
TP703
RV710
IRIS SET
RV704
MB2
RV703
MB1
RV702
MR2
RV701
MR1
TP705

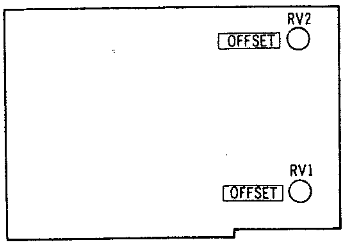
**CP-11** BOARD (Component Side)


RV708
PEDESTAL
RV702
GAMMA
RV705
R GAIN
RV707
MAX GAIN
RV701
WHITE CLIP
RV703
RV704
PEDESTAL
RV706
B GAIN
TP702

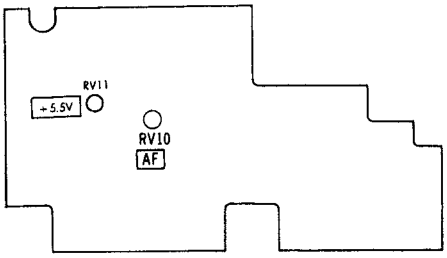
**ME-2** BOARD (Component Side)


RV701
G1 GAIN
RV702
RB1 GAIN
RV703
G2 GAIN
RV704
RB2 GAIN
RV705
MPX
RV706
COLOUR REPRODUCIBILITY
RV707
COLOUR REPRODUCIBILITY
RV708
COLOUR REPRODUCIBILITY
RV709
COLOUR REPRODUCIBILITY
RV710
APERTURE
RV711
APERTURE
RV712
CARRIER BALANCE
RV713
CARRIER BALANCE
RV714
BURST LEVEL
RV715
BURST PHASE
RV716
SET UP
RV717
WHITE CLIP(2)
RV718
FADER GAIN
TP701
TP703
TP702
TP704
TP705
TP708
TP707
TP706
TP711

**PA-7 BOARD (Solder Side)**


RV2
OFFSET
RV1
OFFSET

**AZ-2 BOARD (Solder Side)**


RV11
+5.5V
RV10
AF

## 1-6. FLANGE BACK ADJUSTMENT

**Equipment:** Siemens star
Allen wrenches (1.5mm and 3mm)
⊖ Screwdriver

**Adjustment Method:**

1) Photograph a Siemens star at a distance of 2m from the lens and align the centers of the monitor screen and of Siemens star.
2) Check that the lens zoom lever can be rotated fully to WIDE and TELE and rotate fully to the WIDE side. (Also check that the monitor screen is zooming.)
3) Set the lens focus ring index to the center, "2".

1.5 2 3
|

4) Loosen the hexagon socket set screw using an Allen wrench.
5) Turn the adjusting screw using the ⊖ screwdriver. (See Fig. 1-8.)

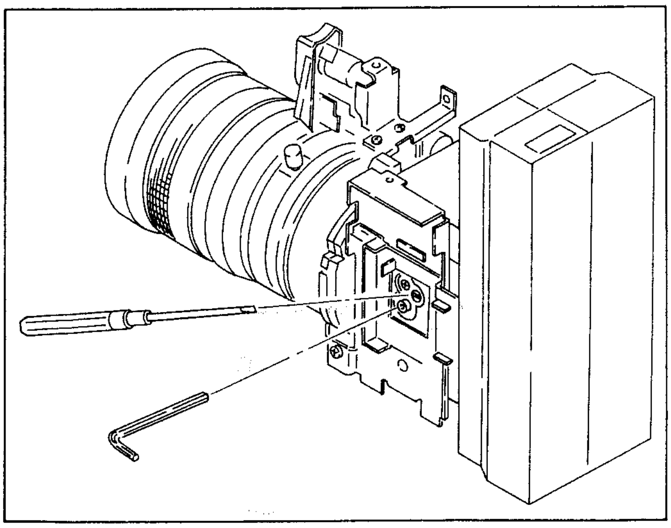


Fig. 1-8

6) Adjust by rotating the camera flange back adjusting screw two or three times right and left until a wedge in the center of the Siemens star becomes clearest while watching the monitor screen.

**Note:** Do not over-rotate the adjusting screw in one direction only.

7) Securely hold the flange back adjusting pin and tighten the hexagon socket set screw.
8) Set the zoom lever fully to TELE and rotate the focus ring. Be sure that the position in which the wedge becomes most clear is within 1.8mm from the center.

5 7 10(ft)
1.5 2 3 (m)
→|←
1.8mm 1.8mm

9) Set the zoom lever to WIDE and rotate the focus ring. The position in which the wedge becomes most clear shall be in the following range.

5 7 10(ft)
1.5 2 3 (m)
|←——→|

10) Securely hold the flange back adjusting pin not to rotate, tighten the hexagon socket set screw, then paint lock paint on the screw head.

## 1-7. IRIS ADJUSTMENT

**Equipment:** Oscilloscope
CP-11 Board TP701

**Subject:** Colour bar chart (standard picture frame: See Fig. 1-7 on page 187.)

**Adjustment Method:**

1) Rotate RV710 on the AW-2 Board and adjust the signal level to 155 ±5mV. (When adjusting, adjust from high to low level.)
2) Cover an ND filter 0.5 in front of the lens.
3) Check that the signal level becomes 155 ±10mV when zoomed in case the ND filter 0.5 in front of the lens is removed. (See Fig. 1-9.)
4) Repeat Steps 1) to 3) until adjustment is made, if the result is not satisfactory.

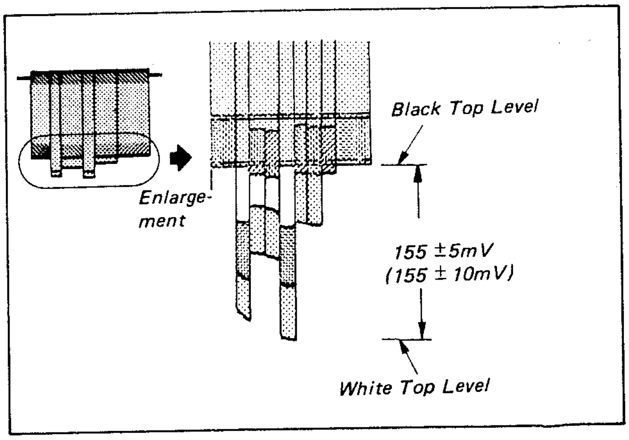


Fig. 1-9

**Note:** Backlight correction (iris) check up
1) Check that the signal level is 75 ±30mV when the IRIS selector switch is set to HIGH LIGHT.
2) Also check that the signal level is 210 ±40mV when set to BACK LIGHT.

### 1-8. AGC SETTING ADJUSTMENT

**Equipment:** Oscilloscope
AW-2 Board TP701

**Subject:** Colour bar chart (standard picture frame)

**Adjustment Method:**

Rotate RV709 on the AW-2 Board and adjust the signal level to 200 ±5mVp-p. (See Fig. 1-10.)

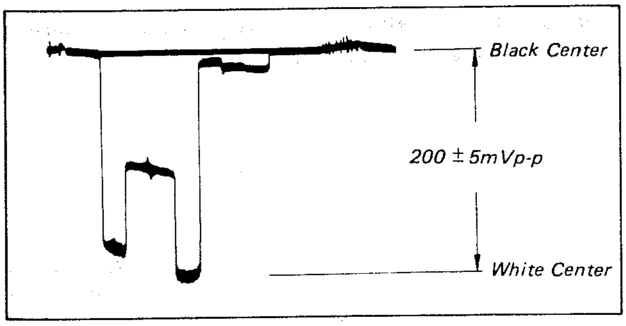


*Fig. 1-10*

### 1-9. AUTO WHITE BALANCE ADJUSTMENT (1)

**Equipment:** Oscilloscope
AW-2 Board CH1 TP701
CH2 TP702
MODE – ADD, POLARITY – INV

**Subject:** All white pattern

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ).
2) Rotate RV706 and RV707 on the AW-2 Board and adjust the waveform to be linear. (See Fig. 1-11.)

**Note:** Press the auto white balance switch, check and adjust when rotating RV706 and RV707.

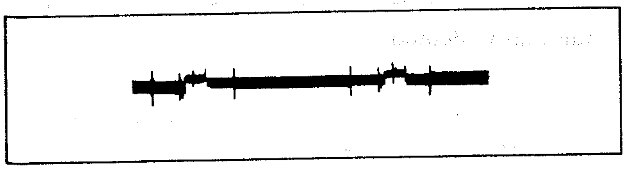


*Fig. 1-11*

### 1-10. G PEDESTAL ADJUSTMENT (1)

**Equipment:** Oscilloscope
ME-2 Board TP701

**Subject:** All black (Cover a black cap on the lens.)

**Adjustment Method:**

1) Rotate RV701 and RV702 on the CP-11 Board counterclockwise and preset the output level to maximum.
2) Rotate RV708 on the CP-11 Board and temporarily adjust the pedestal level to 40 ±5mV. (See Fig. 1-12.)

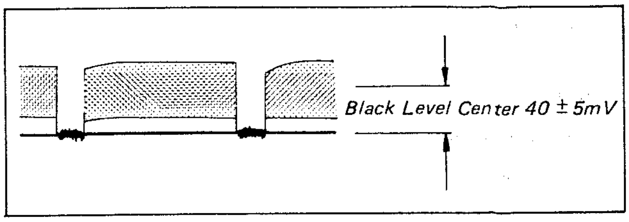


*Fig. 1-12*

### 1-11. GAMMA ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board TP701

**Subject:** Colour bar chart (standard picture frame)

**Adjustment Method:**

Rotate RV702, which is preset in 1-10 G Pedestal Adjustment (1), on the CP-11 Board and adjust the signal level to 380 ±5mVp-p. (See Fig. 1-13.)

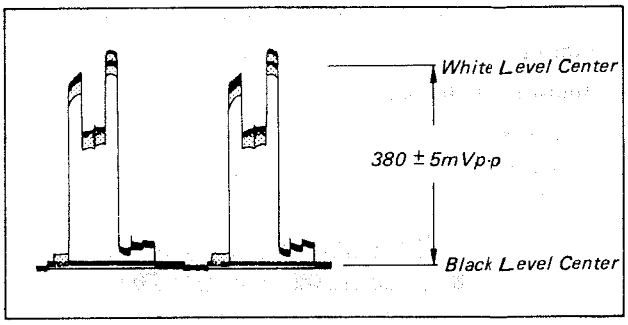


*Fig. 1-13*

### 1-12. WHITE CLIP ADJUSTMENT (1)

**Equipment:** Oscilloscope
ME-2 Board TP701

**Subject:** Colour bar chart (standard picture frame)

**Adjustment Method:**

Rotate RV701, which is preset in 1-10 G Pedestal Adjustment (1), on the CP-11 Board and adjust the signal level to 360 ±5mVp-p. (See Fig. 1-14.)

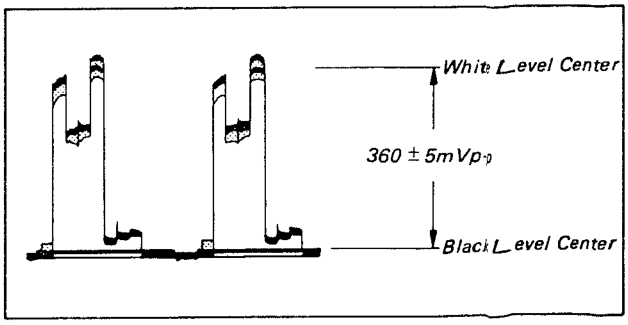


*Fig. 1-14*

### 1-13. G PEDESTAL ADJUSTMENT (2)

**Equipment:** Oscilloscope
ME-2 Board TP701

**Subject:** All black (Cover a black cap on the lens.)

**Adjustment Method:**

Rotate RV708 on the CP-11 Board and adjust the pedestal level to 25 ±5mV. (See Fig. 1-15.)

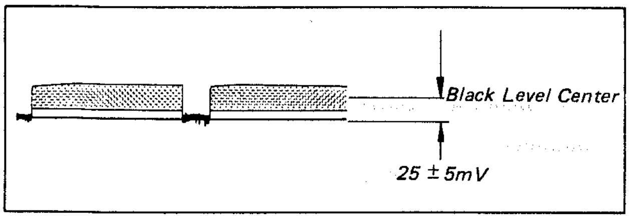


*Fig. 1-15*

### 1-14. R AND B PEDESTAL ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board CH1 TP701
CH2 TP702
MODE – ADD, POLARITY – INV

**Subject:** All black (Cover a black cap on the lens.)

**Adjustment Method:**

Rotate RV703 and RV704 on the CP-11 Board and adjust the waveform to be linear. (See Fig. 1-16.)

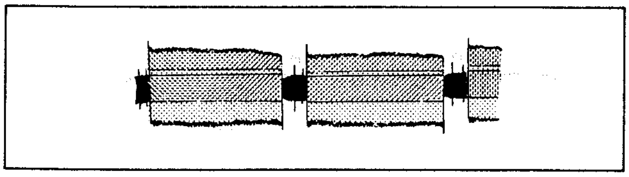


*Fig. 1-16*

### 1-15. MPX ADJUSTMENT

### (USE A VECTORSCOPE)

**Equipment:** Vectorscope

**Subject:** All black (Cover a black cap on the lens.)

**Adjustment Method:**

Rotate RV705 on the ME-2 Board and adjust until the black spots on the vectorscope become one dot. (See Fig. 1-17.)

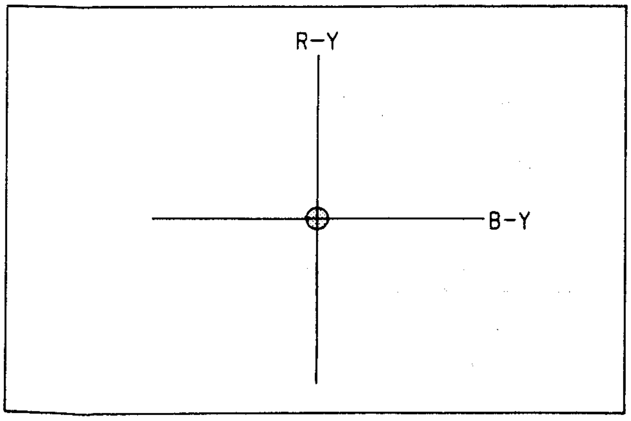


*Fig. 1-17*

### (USE A OSCILLOSCOPE)

**Equipment:** Oscilloscope
ME-2 Board CH1 (X): Q710 emitter (B-Y)
CH2 (Y): TP709 (R-Y)
MODE: X-Y

**Subject:** All black (Cover a black cap on the lens.)

**Adjustment Method:**

Rotate RV705 (MPX) on the ME-2 Board and adjust black spots to merge into one spot.

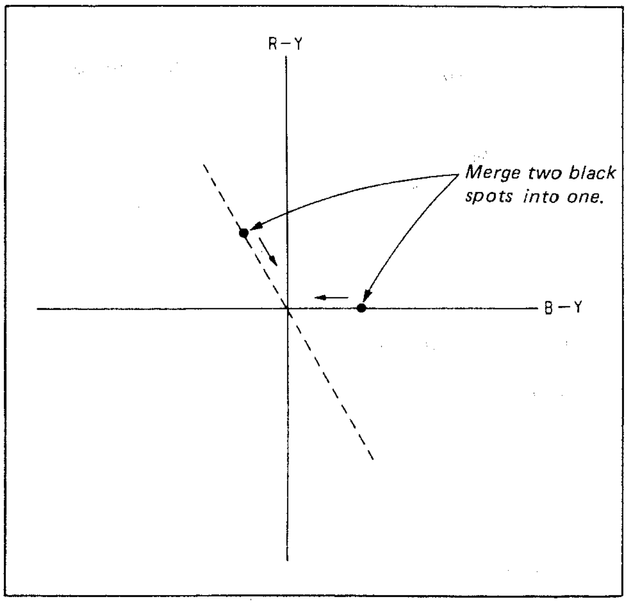


*Fig. 1-18*

### 1-16. CARRIER BALANCE ADJUSTMENT

### (USE A VECTORSCOPE)

**Equipment:** Vectorscope

**Subject:** All black (Cover a black cap on the lens.)

**Adjustment Method:**

1) Set the GAIN knob of the vectorscope to "MAX".
2) Rotate RV712 and RV713 on the ME-2 Board and adjust the black spot to the origin. (See Fig. 1-19.)

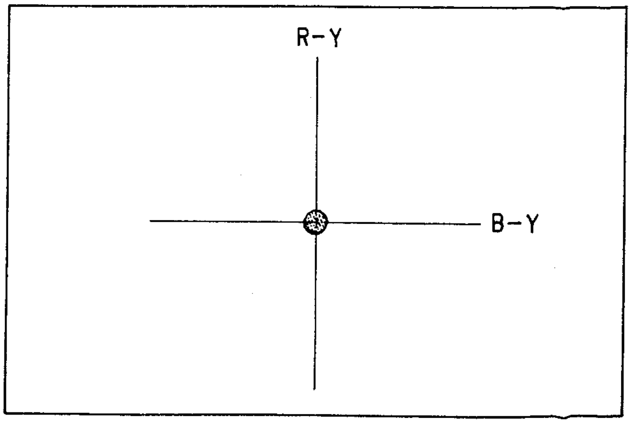


*Fig. 1-19*

3) Set the GAIN knob of the vectorscope to "CAL". Check that the black spot is located less than the origin $\phi$2mm this time. (See Fig. 1-20.)

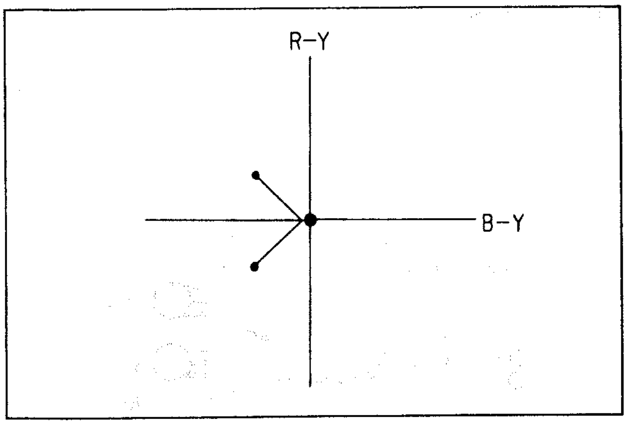


*Fig. 1-20*

### (USE A OSCILLOSCOPE)

**Equipment:** Oscilloscope
ME-2 Board TP711 (V. O)

**Subject:** Colour bar chart (standard picture frame)

**Adjustment Method:**

Rotate RV712 (CB9) RV713 (CB) on the ME-2 Board to minimize the amplitude of the black part.

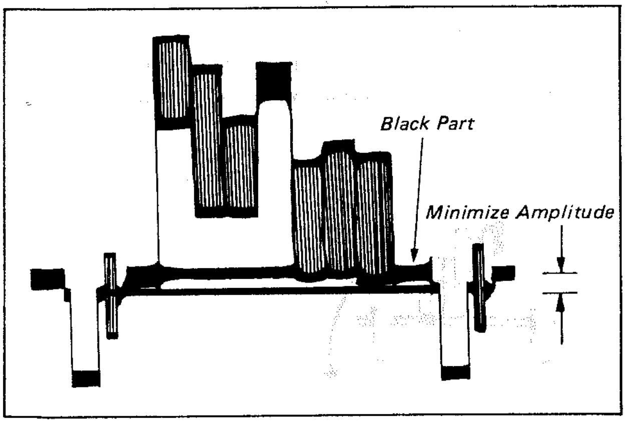
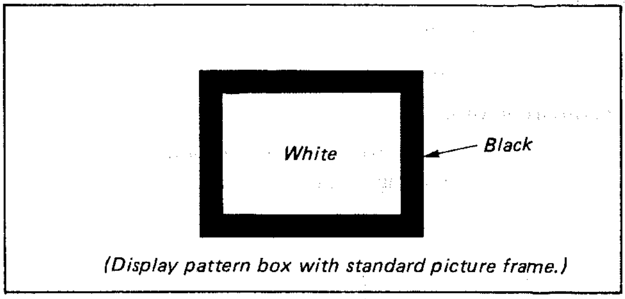


*Fig. 1-21*

### 1-17. G1 AND G2 GAIN ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board (a) CH1 TP703(Go)
CH2 TP704(G1)
(b) CH1 TP703(Go)
CH2 TP705(G2)
MODE − ADD
POLARITY − INV

**Subject:** White pattern (See Fig. 1-22.)



*(Display pattern box with standard picture frame.)*

*Fig. 1-22*

**Adjustment Method:**

1) Set the oscilloscope probe to (a) and rotate RV701 on the ME-2 Board until the waveform becomes linear. (See Fig. 1-23.)
2) Set the oscilloscope probe to (b) and rotate RV703 on the ME-2 Board until the waveform becomes linear. (See Fig. 1-23.)

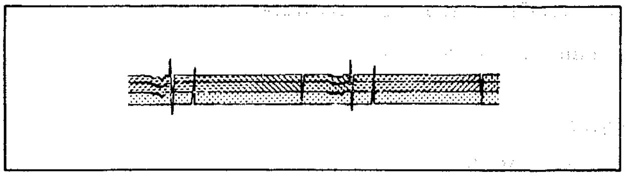


*Fig. 1-23*

### 1-18. RB1 AND RB2 GAIN ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board (a) CH1 TP706(RBo)
CH2 TP707(RB1)
(b) CH1 TP706(RBo)
CH2 TP708(RB2)
MODE − ADD
POLARITY − INV

**Subject:** White pattern (See Fig. 1-22.)

**Adjustment Method:**

1) Set the oscilloscope probe to (a) and rotate RV702 on the ME-2 Board until the waveform becomes linear. (See Fig. 1-23.)
2) Set the oscilloscope probe to (b) and rotate RV704 on the ME-2 Board until the waveform becomes linear. (See Fig. 1-23.)

### 1-19. SETTING ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board TP711

**Subject:** All black (Cover a black cap on the lens.)

**Adjustment Method:**

Rotate RV716 on the ME-2 Board and adjust the signal level to 15 ±5mV (See Fig. 1-24.)

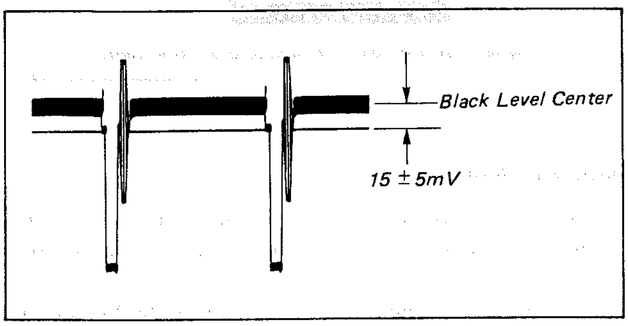

Black Level Center
15 ± 5mV

*Fig. 1-24*

### 1-20. FADER GAIN ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board TP711

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ).
2) Preset RV717 on the ME-2 Board to maximize the white level.
3) Rotate RV718 on the ME-2 Board and adjust the signal level to 335 $^{+0}_{-10}$mV. (See Fig. 1-25.)

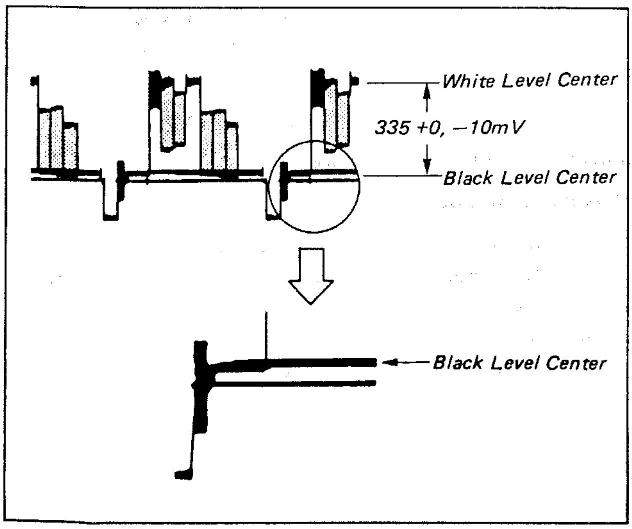

White Level Center
335 +0, −10mV
Black Level Center
Black Level Center

*Fig. 1-25*

### 1-21. APERTURE ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board TP711

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ).
2) Preset RV710 and RV711 on the ME-2 Board as shown in Fig. 1-26.

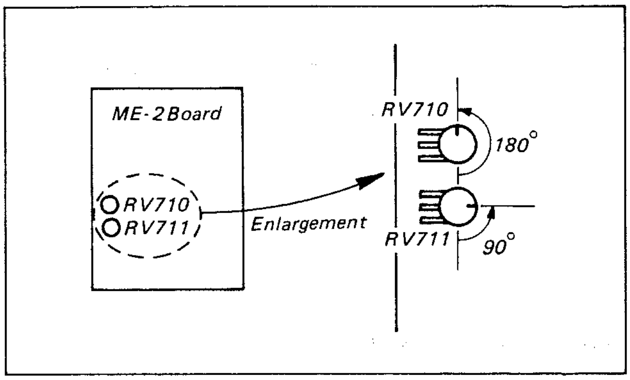

ME-2Board
RV710
RV711
Enlargement
RV710
180°
RV711
90°

*Fig. 1-26*

3) Focus correctly and move the camera right and left slightly. Fix the camera when the aperture becomes maximum.
4) Rotate RV711 on the ME-2 Board and adjust the aperture level between white and magenta to 90 ±10mV. (See Fig. 1-27.)
5) Rotate RV710 on the ME-2 Board and adjust the aperture level between white and magenta to 40 ±10mV. (See Fig. 1-27.)

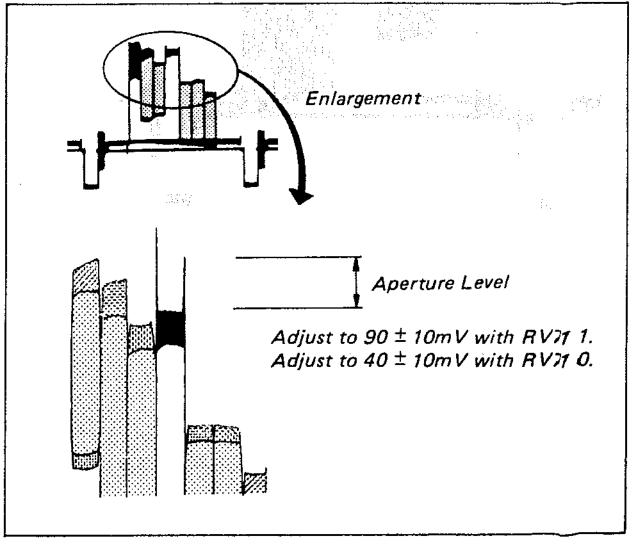

Enlargement
Aperture Level
Adjust to 90 ± 10mV with RV71 1.
Adjust to 40 ± 10mV with RV71 0.

*Fig. 1-27*

## 1-22. WHITE CLIP ADJUSTMENT (2)

**Equipment:** Oscilloscope
ME-2 Board TP711

**Subject:** High brightness pattern

**Adjustment Method:**

1) Rotate RV717 on the ME-2 Board and adjust the signal level to 420 ±10mV. (See Fig. 1-28.)

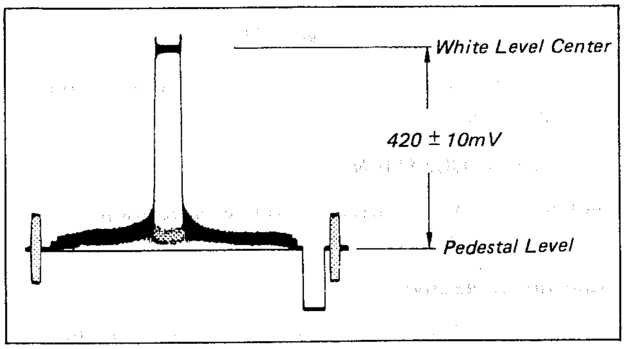


*Fig. 1-28*

2) Repeat adjusting and checking until the fader gain, setting up, and white clip adjustments meet the required levels.

## 1-23. AUTO WHITE BALANCE ADJUSTMENT (2) (USE A VECTORSCOPE)

**Equipment:** Vectorscope

**Subject:** All white pattern

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ).
2) Set the vectorscope GAIN knob to "MAX".
3) Rotate RV706 and RV707 on the AW-2 Board and adjust the center of the white spot on the vectorscope to the origin. (See Fig. 1-29.)

**Note:** Press the white balance switch, check and adjust for when rotating RV706 and RV707.

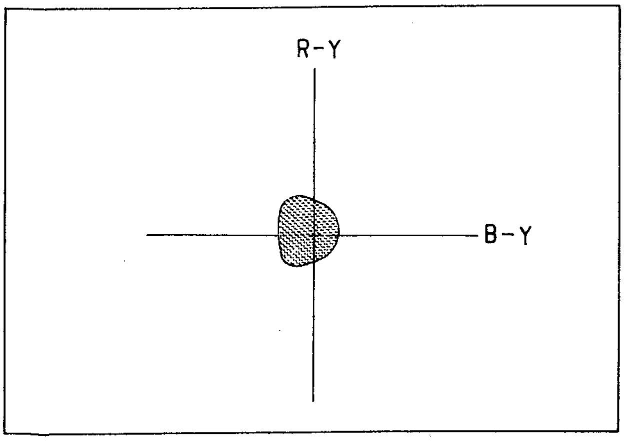


*Fig. 1-29*

## (USE A OSCILLOSCOPE)

**Equipment:** Oscilloscope
CH1 (X): ME-2 Board Q710 emitter (B-Y)
CH2 (Y): ME-2 Board TP709 (R-Y)
MODE: X-Y

**Subject:** White pattern

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ).
2) Cover a black cap on the lens, check the black spot position, then remove the black cap.
3) Rotate RV706 (B OFS) and RV707 (R OFS) on AW-2 Board to overlap the white and black spots.

**Note:** When RV706 and RV707 are rotated, press the white balance switch and adjust while checking the white and black spots.

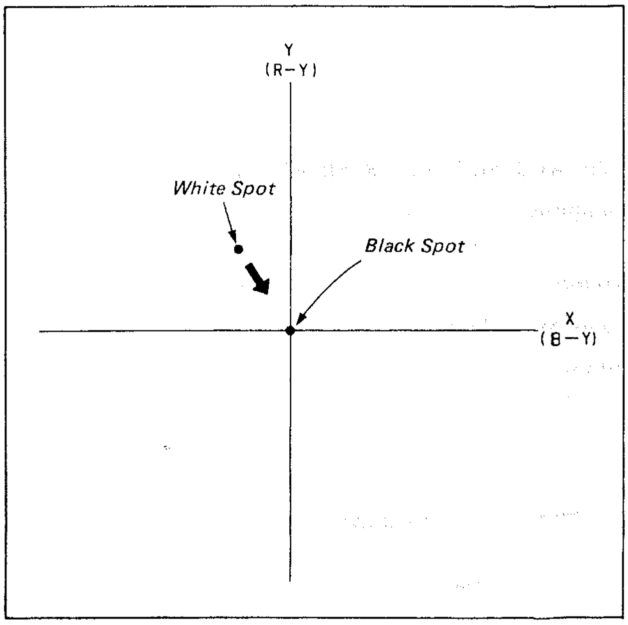


*Fig. 1-30*

### 1-24. MAX GAIN ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board TP711

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ) and press once.
2) Cover an ND filter 1.9 in front of the lens.
3) Adjust the waveform value to 175 ±10mV with RV707 on the CP-11 Board. (See Fig. 1-31.)

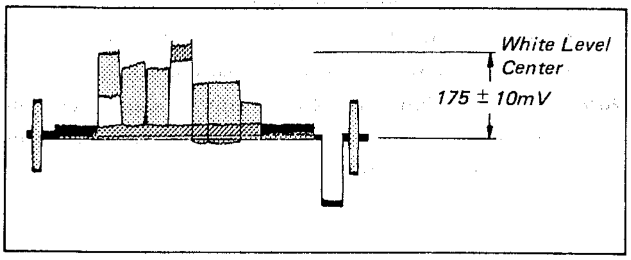


*Fig. 1-31*

### 1-25. AGC SET ADJUSTMENT (2)

**Equipment:** Oscilloscope
AW-2 Board TP701

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

Adjust the waveform value to 200 ±5mVp-p with RV709 on the AW-2 Board. (See Fig. 1-32.)

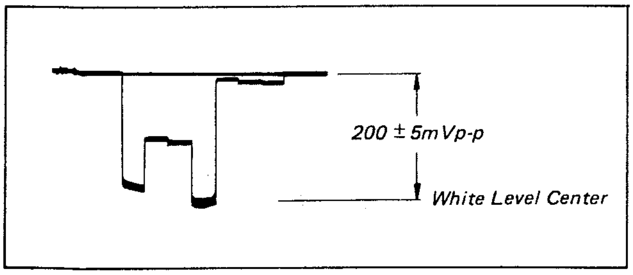


*Fig. 1-32*

### 1-26. AGH SET ADJUSTMENT

**Equipment:** Oscilloscope
ME-2 Board TP711

**Subject:** All white pattern

**Adjustment Method:**

1) Set the IRIS selector switch to "BACK LIGHT".
2) Rotate RV711 on the AW-2 Board to adjust the waveform to 350 ±20mV. (See Fig. 1-33.)

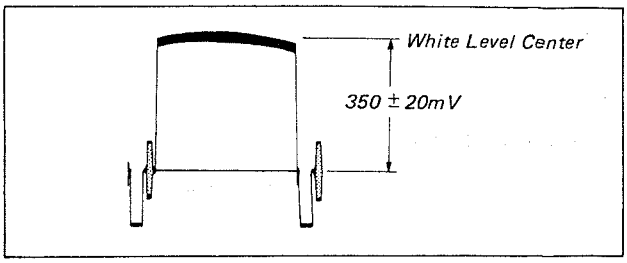


*Fig. 1-33*

3) Set the IRIS selector switch to "HIGH LIGHT" and check that the waveform is 100 ±30mV.

### 1-27. LX ADJUSTMENT

**Subject:** White pattern (Zoom lever position: Standard picture frame)

**Adjustment Method:**

1) Cover an ND filter 2.0 in front of the lens and wait 2 or 3 seconds.
2) Rotate RV708 on the AW-2 Board, light the LX lamp (EVF), thereafter extinguish it.
3) Exchange with an ND filter 2.1 and check that the LX lamp (EVF) lights in less than 3 seconds.
4) Check that the lamp extinguishes with an ND filter 2.0 and lights with an ND filter 2.1. Repeat adjusting and checking if not satisfactory.

**Note:** The lens sensitivity changes depending on the zoom position. Do not move the zoom ring when making an adjustment.

### 1-28. COLOUR REPRODUCIBILITY ADJUSTMENT (USE A VECTORSCOPE)

**Equipment:** Vectorscope (NTSC mode)

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ).
2) Rotate RV706, RV707, RV708, and RV709 on the ME-2 Board and place the six colour spots inside their standard frames. (See Fig. 1-34.)

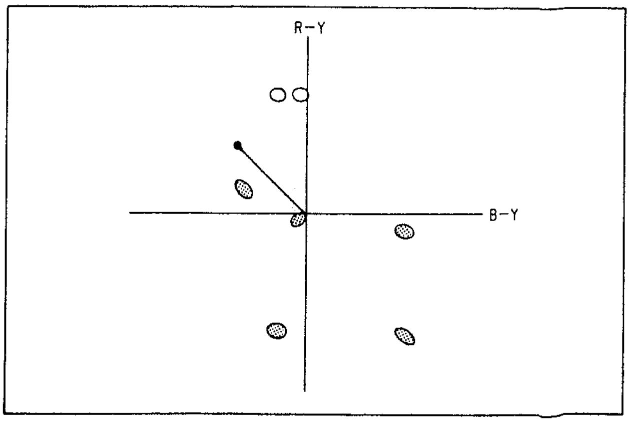


*Fig. 1-34*

### (USE A OSCILLOSCOPE)

**1.**

**Equipment:** Oscilloscope
ME-2 Board Q710 emitter (B-Y) and TP709 (R-Y)

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white blance switch to "AUTO" ( ☑ ) and press the switch once.
2) Connect the oscilloscope to the Q710 emitter (B-Y) on the ME-2 Board.
3) Rotate RV708 (RM) on the ME-2 Board to eliminate the step between white and magenta.
4) Connect the oscilloscope to TP709 (R-Y).
5) Rotate RV709 (BM) on the ME-1 Board to eliminate the step between magenta and red.

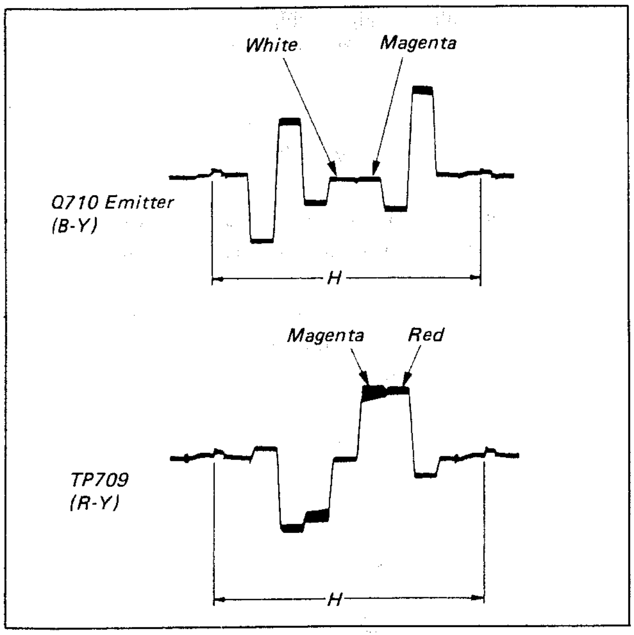


*Fig. 1-35*

**2**

**Equipment:** Oscilloscope
ME-2 Board TP711 (V, O)

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ☑ ) and press the swtich once.
2) Rotate RV707 (B-Y) on the ME-2 Board to minimize the blue amplitude.
3) Rotate RV706 (R-Y) on the ME-2 Board to adjust the red amplitude to 244 ±5mVp-p.
4) Rotate RV707 (B-Y) to adjust the yellow amplitude to 168 ±5mVp-p.

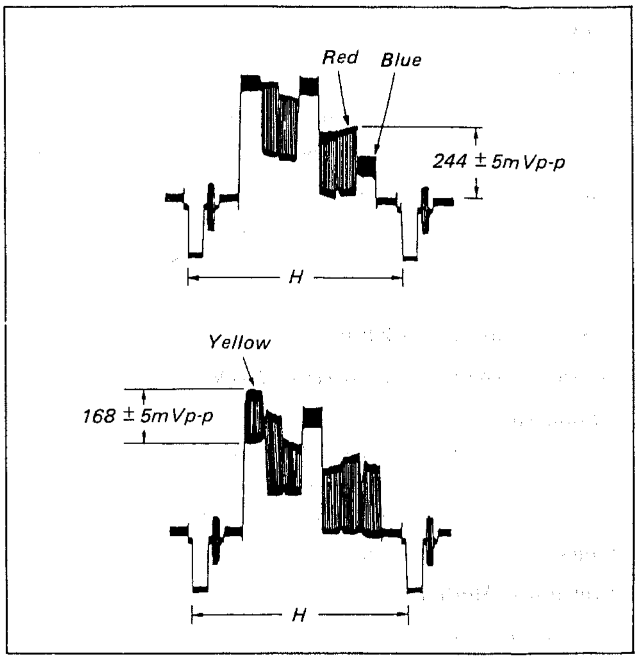


*Fig. 1-36*

### 1-29. BURST ADJUSTMENT
### (USE A VECTORSCOPE)
### 1. BURST PHASE

**Equipment:** Vectorscope (NTSC mode)

**Subject:** Colour bar chart (Standard pictureframe)

**Adjustment Method:**

1) Burst signals are made to intermingle with each otther by the vectorscope PHASE adjustment knob.
2) Rotating RV715 on the ME-2 Board, adjust the Burst phase to become 135° ±2°.

**Note:** Adjustment is performed by rotating RV715 clockwise from the fully counterclockwise tuned position.

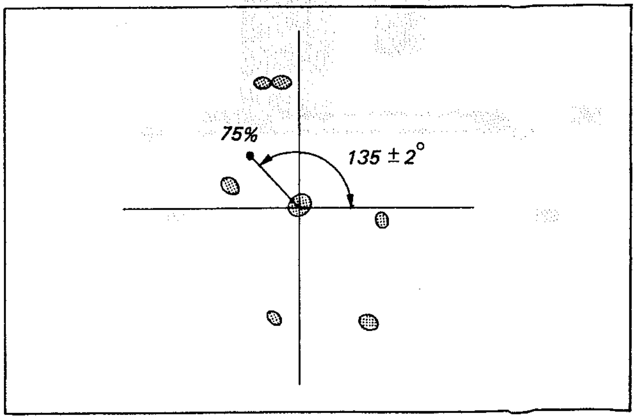


*Fig. 1-37*

### 2. BURST GAIN

**Equipment used:** Vectorscope (NTSC mode)

**Subject:** Colour bar chart (standard picture frame)

**Adjustment method:**

Adjust the burst level center to less than ±1mm of burst position on scale 75% using RV714 on the ME-2 Board.

**Note:** Adjust the value between two different levels of the white spot so that it becomes the burst position on scale 75%, when these two levels are not the same. (See Fig. 1-37.)

### (USE A OSCILLOSCOPE)

### BURST PHASE AND BURST GAIN

**Equipment:** Oscilloscope
ME-2 Board TP711 (V, O)
Digital voltmeter
ME-2 Board RV715 (hue) sliding terminal

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ☐ ) and press the switch once.
2) Rotate RV715 (hue) to adjust the RV715 sliding terminal voltage to 2.80V dc.
3) Rotate RV714 (GB) on the ME-2 Board to adjust the burst level to 150 ±5mVp-p.
4) Check the colours reproduced on the monitor TV screen.

**Note:** Magenta is reproduced in a red-tinted colour.

5) If a hue adjustment is necessary, rotate RV715 within the range of the RV715 sliding terminal voltage of 2.80 ±0.02V dc and repeat Steps 3) and 4).

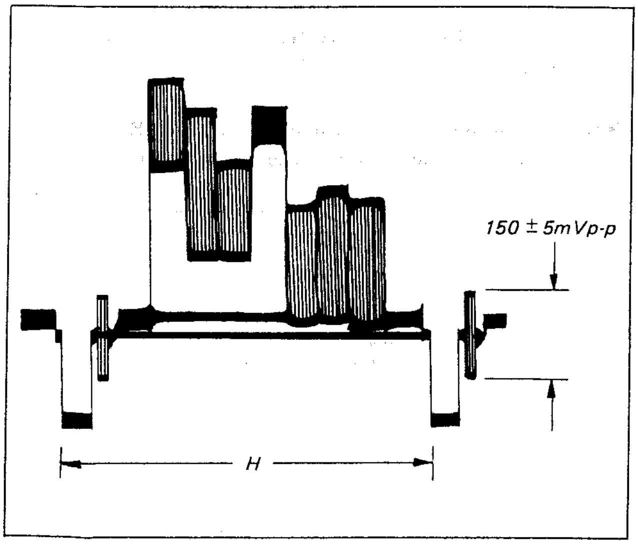


*Fig. 1-38*

### 1-30. R AND B GAIN ADJUSTMENTS (USE A VECTORSCOPE)

**Equipment used:** Vectorscope

**Subject:** White pattern (Zoom lever position: Standard picture frame)

**Adjustment Method:**

**Note:** When performing the adjustments on the steps of 3), 5), 8) and 10), set the GAIN of a vectorscope as high as possible.

1) Set the white balance switch to AUTO ( ☐ ).
2) Preset RV705 on the CP-11 Board to the mechanical center. (See Fig. 1-39.)

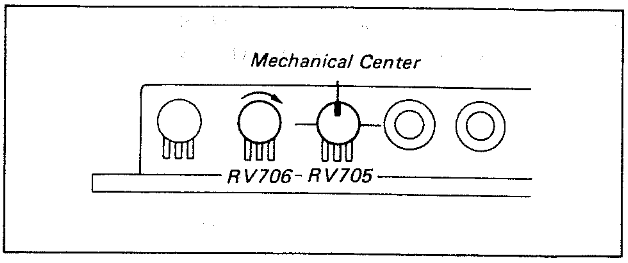


*Fig. 1-39*

3) Rotate RV706 on the CP-11 Board clockwise and preset so that the white spot on the vector moves to left fully.
4) Place a filter W14 in front of the lens, press the auto white balance swtich, and check that the white spot is slided left from the R-Y axis. (See Fig. 1-40.)

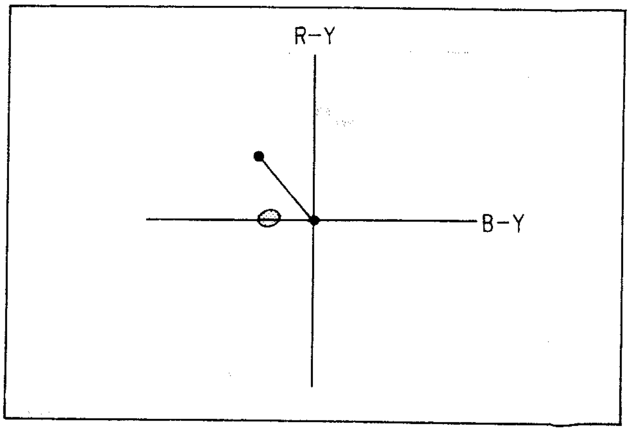


*Fig. 1-40*

5) Rotate RV706 counterclockwise and move the white spot to the origin.
6) Press the white balance switch.
7) Check that the white spot is less than 3ϕ from the origin and that the white balance alarm lamp inside EVF is not flashing.
   Rotate RV706 slightly counterclockwise and repeat Steps 6) and 7) if either one of these two conditions is not met.
8) Rotate RV705 clockwise and preset so that the white spot moves to lower right fully.
9) Change the filter to a C22 filter. Check that the white spot is slided under the B-Y axis when the white balance switch is pressed. (See Fig. 1-41.)

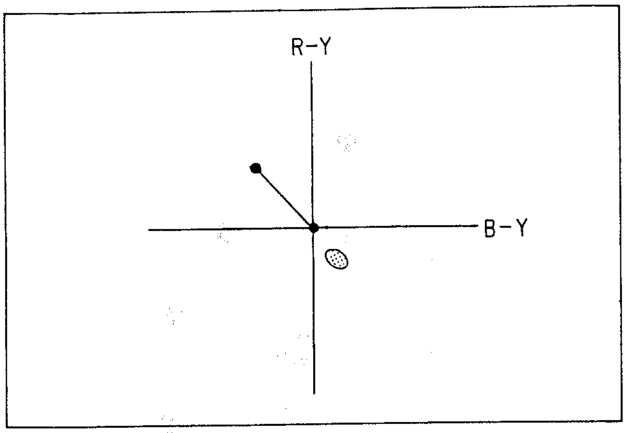


*Fig. 1-41*

10) Rotate RV705 counterclockwise and move the white spot closer to the origin.
11) Press the white balance switch.
12) Repeat Steps 10) and 11) and adjust so that the white spot is located less than 3ϕ from the origin and that the white balance alarm lamp inside EVF is extinguished.
13) Rotate RV705 counterclockwise further to place the white spot 4.0 ±0.5mm upper left of the origin. Then push the white balance switch and check that the white spot is located less than 3ϕ from the origin and that white balance alarm lamp inside EVF is not flashing either. (See Fig. 1-42.)

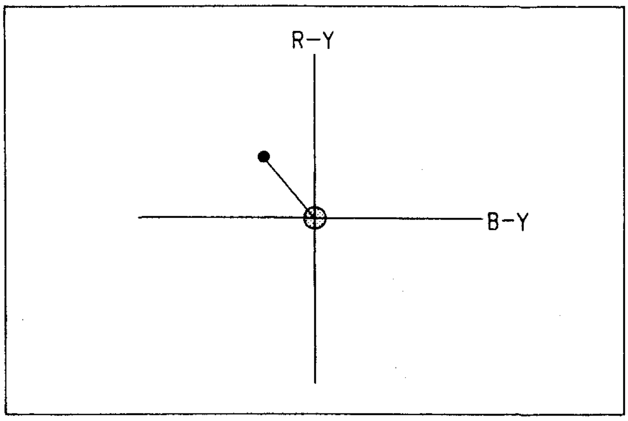


*Fig. 1-42*

**(USE A OSCILLOSCOPE)**

**Equipment:** Oscilloscope
CH1 (X): ME-2 Board Q710 emitter (B-Y)
CH2 (Y): ME-2 Board TP709 (R-Y)
MODE: X-Y
Filter: W14, C22

**Subject:** White pattern

**Adjustment Method:**

1) Set the white balance switch to "AUTO" ( ).
2) Preset RV705 (RG) on the CP-11 Board to the mechanical center.

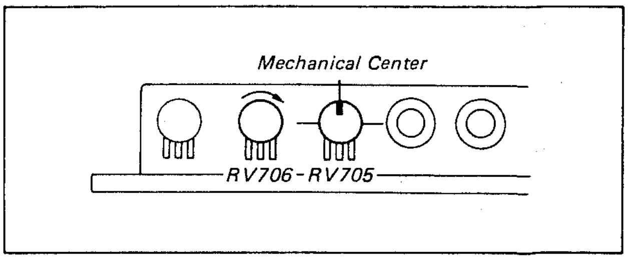


*Fig. 1-43*

3) Cover a black cap on the lens, check the black spot position, then remove the black cap.
4) Rotate RV706 (BG) on the CP-11 Board clockwise and preset so that the white spot slides to the left side full relative to the black spot.
5) Cover a filter W14 on the lens, press the white balance switch, then check that the white spot is slided left of the black spot.
   (See Fig. 1-44 Ⓐ .)
6) Rotate RV706 counterclockwise and align the centers of the white and black spots.
   (See Fig. 1-44 Ⓑ .)
7) Press the white balance switch.
8) Check that the voltage difference between the centers of the white and black spots is less than 7mV and that the white balance alarm lamp in EVF is not flashing.
   (See Fig. 1-44 Ⓒ .)
9) Rotate RV706 counterclockwise slightly if either one of these two conditions is not met and repeat Steps 7) and 8).
10) Rotate RV705 (RG) clockwise and preset so that the white spot approaches immediately below the right-hand side of the black spot.
11) Change the filter to C22, press the white balance switch, then check that the white spot is slided below (lower right) of the black spot.
    (See Fig. 1-44 Ⓔ .)
12) Rotate RV705 counterclockwise and overlap the centers of the white and black spots.
    (See Fig. 1-44 Ⓕ .)
13) Press the white balance switch.
14) Repeat Steps 12) and 13) to adjust so that the voltage difference between the centers of the white and black spots is less than 5mV and that the white balance alarm lamp inside EVF is not flashing.
    (See Fig. 1-44 Ⓖ .)
15) Rotate RV705 counterclockwise additionally and place the white spot center 13 ±2mV above the black spot center.
    (See Fig. 1-44 Ⓗ .)
16) Press the white balance switch and check that the white spot center is overlapping the black spot center and that the white balance alarm lamp inside EVF is not flashing.
    (See Fig. 1-44 Ⓘ .)

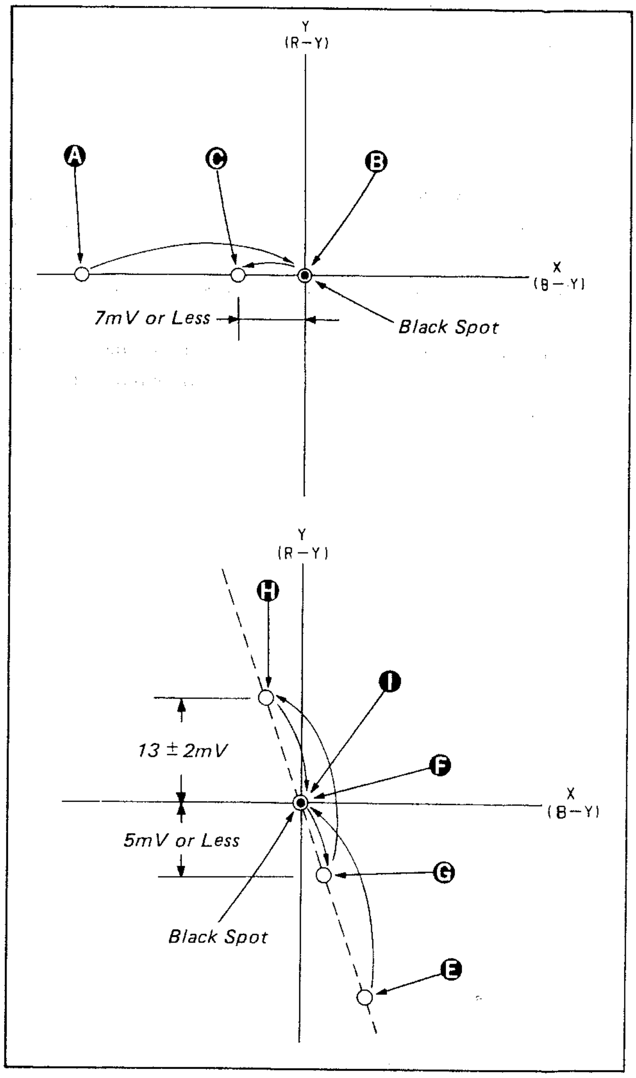


Fig. 1-44

## 1-31. MR$_1$ AND MB$_1$ ADJUSTMENT (USE A VECTORSCOPE)

**Equipment:** Vectorscope

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to ( ☼ ).
2) Set the vectorscope GAIN knob to "MAX".
3) Rotate RV701 and RV703 on the AW-2 Board and adjust the white spot on the vectorscope to be placed on the origin. (See Fig. 1-45.)
4) Set the vectorscope GAIN knob to "CAL".
   At that time check that the white spot is within $\phi$1mm distance from the center of the origin.

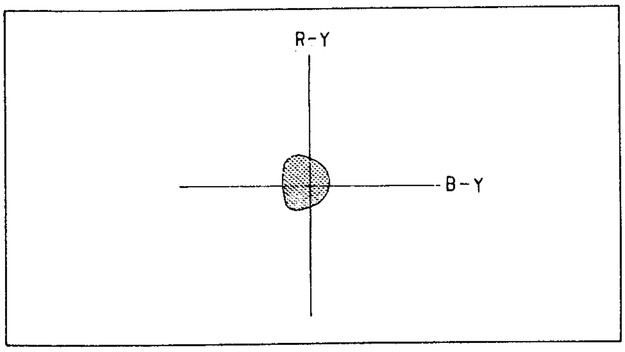


*Fig. 1-45*

### (USE A OSCILLOSCOPE)

**Equipment:** Oscilloscope
CH1 (X): ME-2 Board Q710 emitter (B-Y)
CH2 (Y): ME-2 Board TP709 (R-Y)
MODE: X-Y

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to the M$_1$ ( ☼ ) position.
2) Cover a black cap on the lens, check the black spot position, then remove the black cap.
3) Rotate RV701 (MR$_1$) and RV703 (MB$_1$) on the AW-2 Board to overlap the centers of the white and black spots.

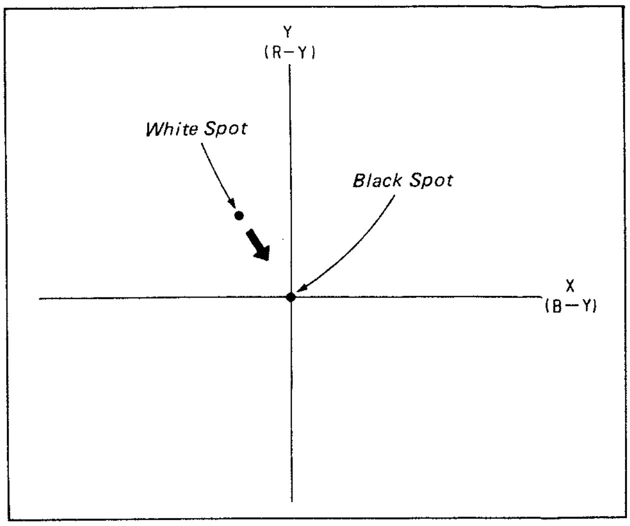


*Fig. 1-46*

## 1-32. MR$_2$ AND MB$_2$ ADJUSTMENT (USE A VECTORSCOPE)

**Equipment:** Vectorscope

**Subject:** Colour bar chart (standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to ( ☼ ).
2) Cover a filter for fine weather in front of the lens.
3) Set the vectorscope GAIN knob to "MAX".
4) Rotate RV702 and RV704 on the AW-2 Board to align the white spot on the vectorscope to a position approximately 2mm below the origin on the R-Y axis. (See Fig. 1-47.)

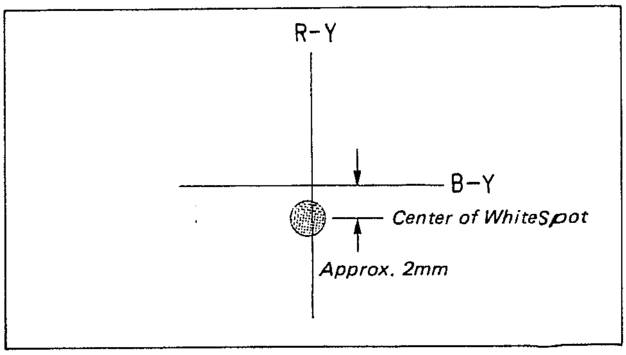


*Fig. 1-47*

### (USE A OSCILLOSCOPE)

**Equipment:** Oscilloscope
CH1 (X): ME-2 Board Q710 emitter (B-Y)
CH2 (Y): ME-2 Board TP709 (R-Y)
MODE: X-Y
Filter: For fine weather (5800°K)

**Subject:** Colour bar chart (Standard picture frame)

**Adjustment Method:**

1) Set the white balance switch to the M2 ( ☼ ) position.
2) Mount a filter for fine weather on the lens.
3) Cover a black cap on the lens, check the black spot position, then remove the black cap.
4) Rotate RV702 (MR2) and RV704 (MB2) on the AW-2 Board to position the white spot center directly below the black spot center (6.5mV).

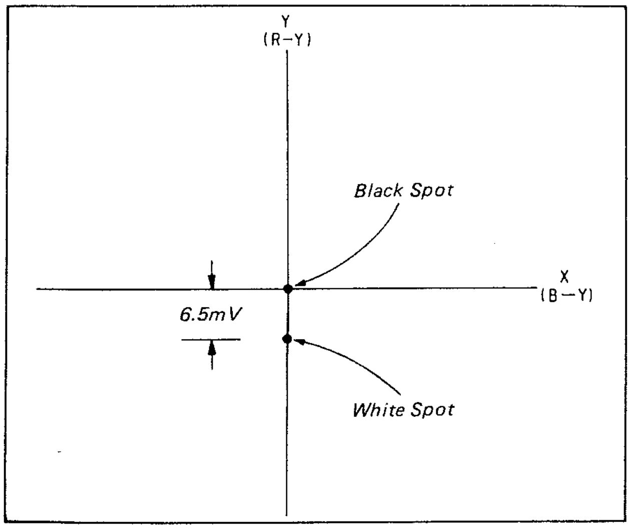


*Fig. 1-48*

### 1-33. VIDEO OUT SIGNAL CONFIRMATION

**Equipment:** Oscilloscope
ME-2 Board TP711

**Subject:** Colour bar chart (Standard picture frame)

**Checking Method:**

1) After making all the required adjustments, check that the signal level is ≦ 580mVp-p. (See Fig. 1-48.)
2) Check and adjust the MAX gain and colour reproducibility when the signal level is higher than 580mV p-p.

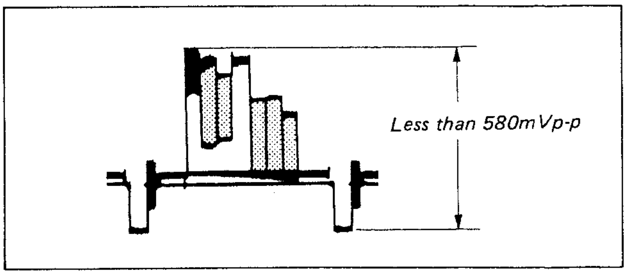


*Fig. 1-49*

### 1-34. ADJUSTMENT OF AUTOMATIC FOCUS SYSTEM

#### 1-34-1. Measurement Distance Check

**Connection Diagram**

1) Set up the cross chart and the 8mm video camera as shown in the diagram below.
2) Align the heights and horizontal levels of the cross chart and 8mm video camera.

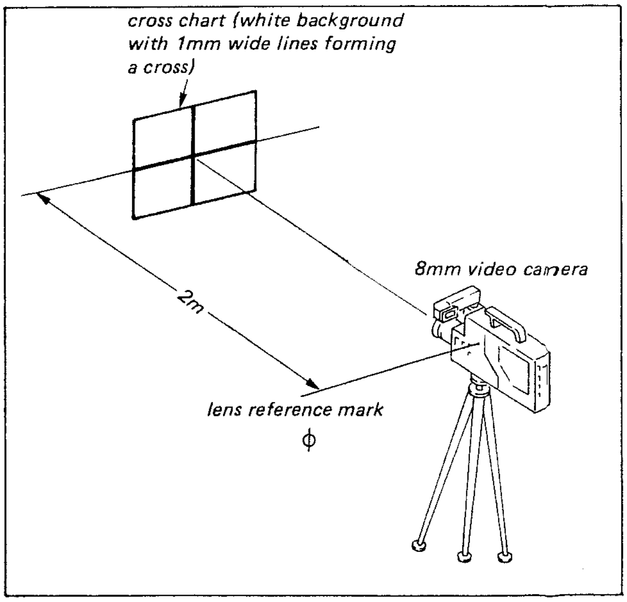

cross chart (white background with 1mm wide lines forming a cross)
2m
8mm video camera
lens reference mark
ϕ

*Fig. 1-50*

**Checking Procedure:**

1) Set the focus switch to "AUTO" ( ).
2) Set the lens zoom ring on the telephoto side.
Rotate the focus ring to ∞ by hand.
3) Check that the difference between the 2m mark on the focus ring and the mark is ±1mm when the focus ring is released.
4) Set to 1.3(m) by rotating focus ring manually.
5) Confirm Item 3.

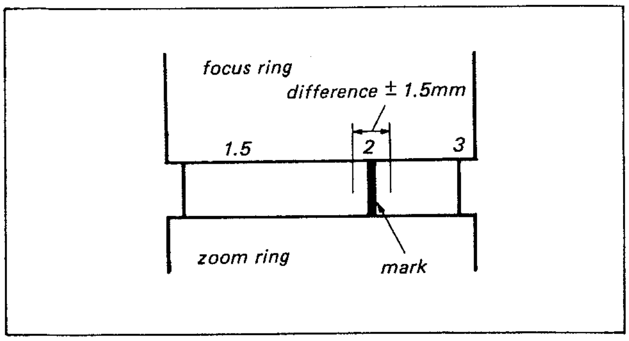

focus ring
difference ± 1.5mm
1.5
2
3
zoom ring
mark

Fig. 1-51

### 1-34-2. Zoom Lens Block

#### 1. Zoom Motor Unit and Focus Motor Unit

1) When mounting the zoom motor unit and focus motor adjust the engagement of the gears so that the play of the manual zoom and focus ring is 0.5mm – 1mm on the zoom ring and focus ring respectively, and fix with screws. (Fig. 1-52)

**Note:** If there is not enough play, manual torque will be heavy at high and low temperatures.

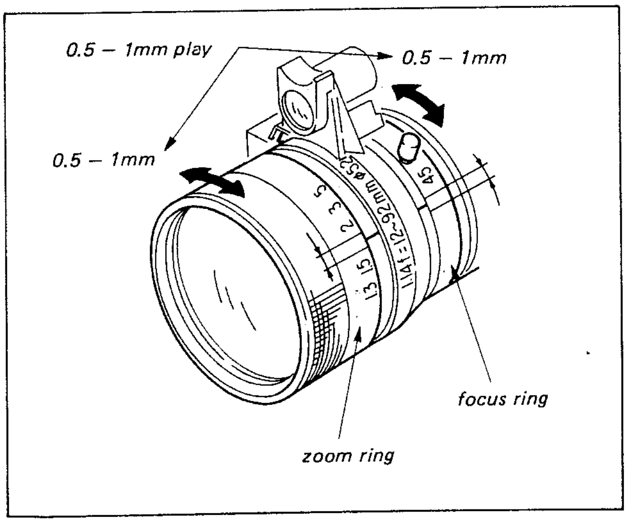

0.5 – 1mm play
0.5 – 1mm
0.5 – 1mm
focus ring
zoom ring

Fig. 1-52

#### 2. Iris Unit

1) Check iris operation. (Fig. 1-53)
2) Adjust flange back.

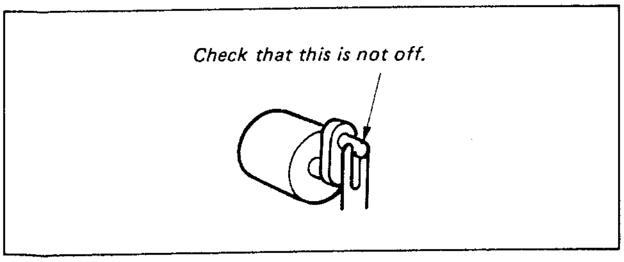

Check that this is not off.

Fig. 1-53

#### 3. Zoom Ring Unit

**[Replacement]**

1) Open the AZ-2 board.
2) Remove the zoom motor unit from the lens barrel.
3) Remove the screw holding the rear lens barrel and the rear lens barrel. (Fig. 1-54)
4) Remove the screw holding the middle lens barrel and the middle lens barrel. (Fig. 1-55)
5) Remove the zoom ring unit.
6) Replace the zoom ring unit.

**[Mounting Procedure]**

1) Mount the zoom ring unit. (Fig. 1-56)
2) Mount the middle lens barrel on the rear lens barrel.
3) Mount the zoom motor unit and lens barrel.
4) Check manual zoom operation.
5) Be careful not to get dirt or fingerprints on the lens.
6) Be careful not to scratch the ND filter on the iris unit.
7) Adjust flange back.

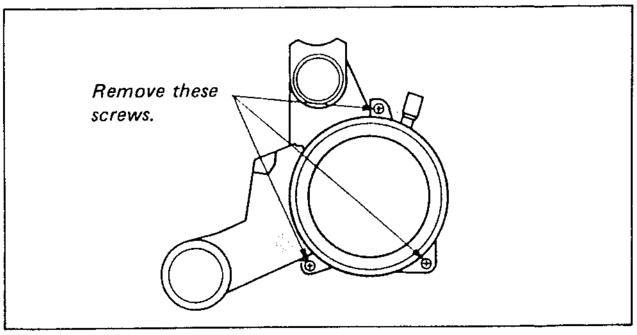

Remove these screws.

Fig. 1-54

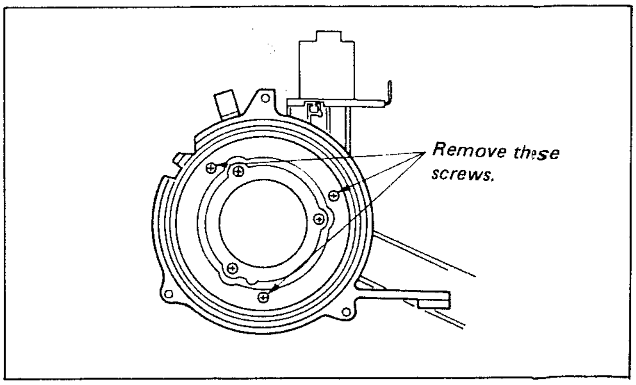

Remove these screws.

Fig. 1-55

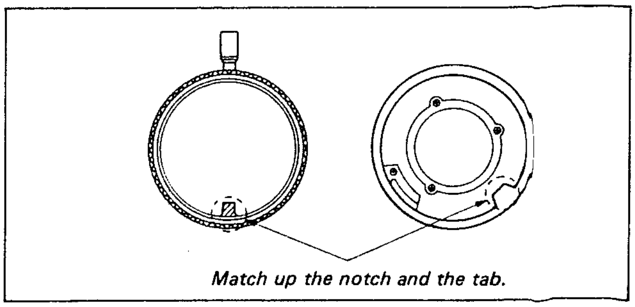

Match up the notch and the tab.

Fig. 1-56

### 1-34-3. AF Adjustment

**1. +5.5V Adjustment (AZ-2 Board)**

Required equipment: Digital voltmeter

[Adjustment Method]

Adjust to 5.5 ±0.1V dc with RV11.

**2. VFC Adjustment**

Required equipment: Frequency counter

Adjustment Method:

1) Short the D001 cathode and 1.7V line to make the waveform stationary.
2) Measure the frequency of Pin ③ of IC010 and adjust with RV010 if not within the specification. (GND: Pin ④ of CN1).

Specification: 29.5 – 30.3kHz (cycle 33 $^{+1}_{-0}$ µsec)

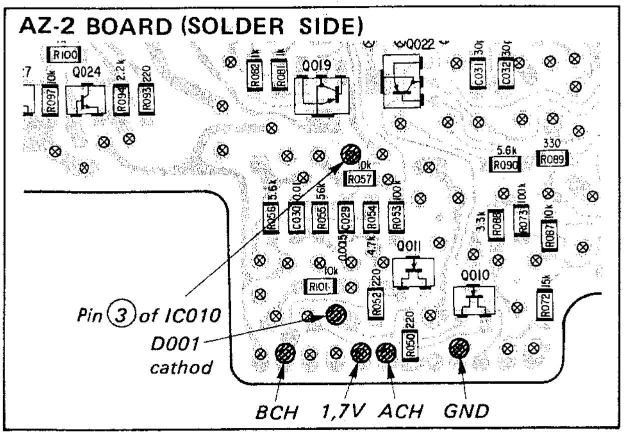

AZ-2 BOARD (SOLDER SIDE)
Q024
Q019
Q022
Q011
Q010
Pin ③ of IC010
D001
cathod
BCH
1,7V
ACH
GND

Fig. 1-57

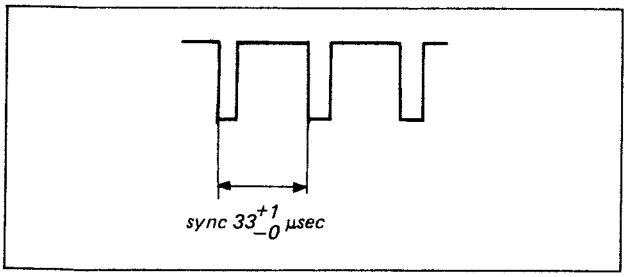

sync $33^{+1}_{-0}$ µsec

Fig. 1-58

**3. Offset Adjustment (AZ-2, PA-7 Boards)**

Required equipment:

Oscilloscope: CH1 Ach ( ⑤ ) . . . AZ-2 board
CH2 Bch ( ⑦ ) . . . AZ-2 board
(Fig. 1-57)

Adjustment Method:

1) Cover so that infrared rays do not enter the light-receiving sensor. (A 25ϕ piece will work.) (Fig. 1-59)
2) Adjust PA-7 board RV1 (Ach) and RV2 (Bch) so that the Ach and Bch integrated waveforms are 0 (0 potential difference). (Fig. 1-60)

Specifications: within $^{+0.02V}_{-0.05V}$

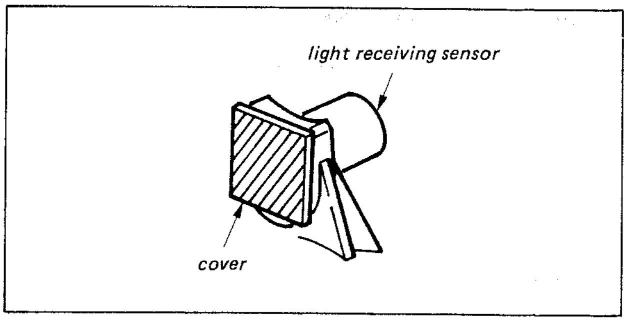

light receiving sensor
cover

Fig. 1-59

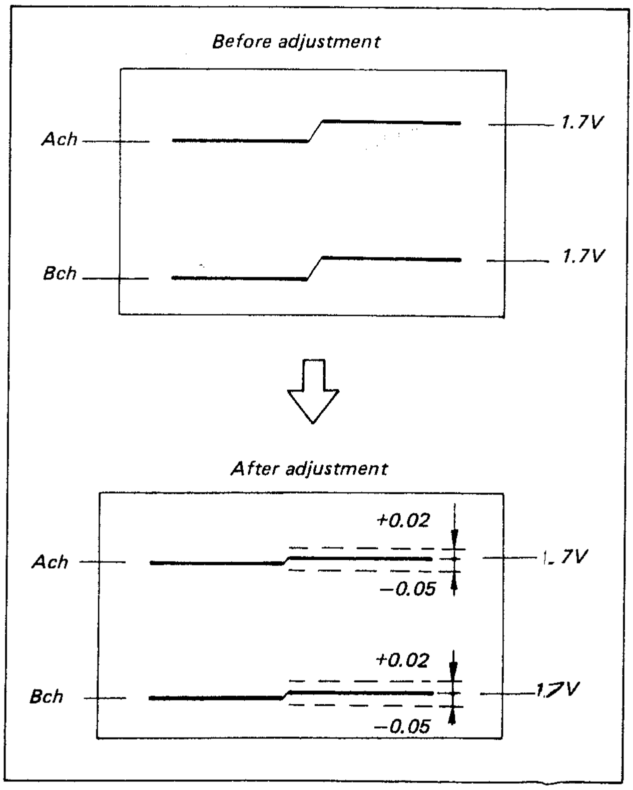

Before adjustment
Ach
1.7V
Bch
1.7V
After adjustment
+0.02
Ach
1.7V
-0.05
+0.02
Bch
1.7V
-0.05

Fig. 1-60

# 2. MECHANISM SECTION ADJUSTMENT (VIDEO SECTION)

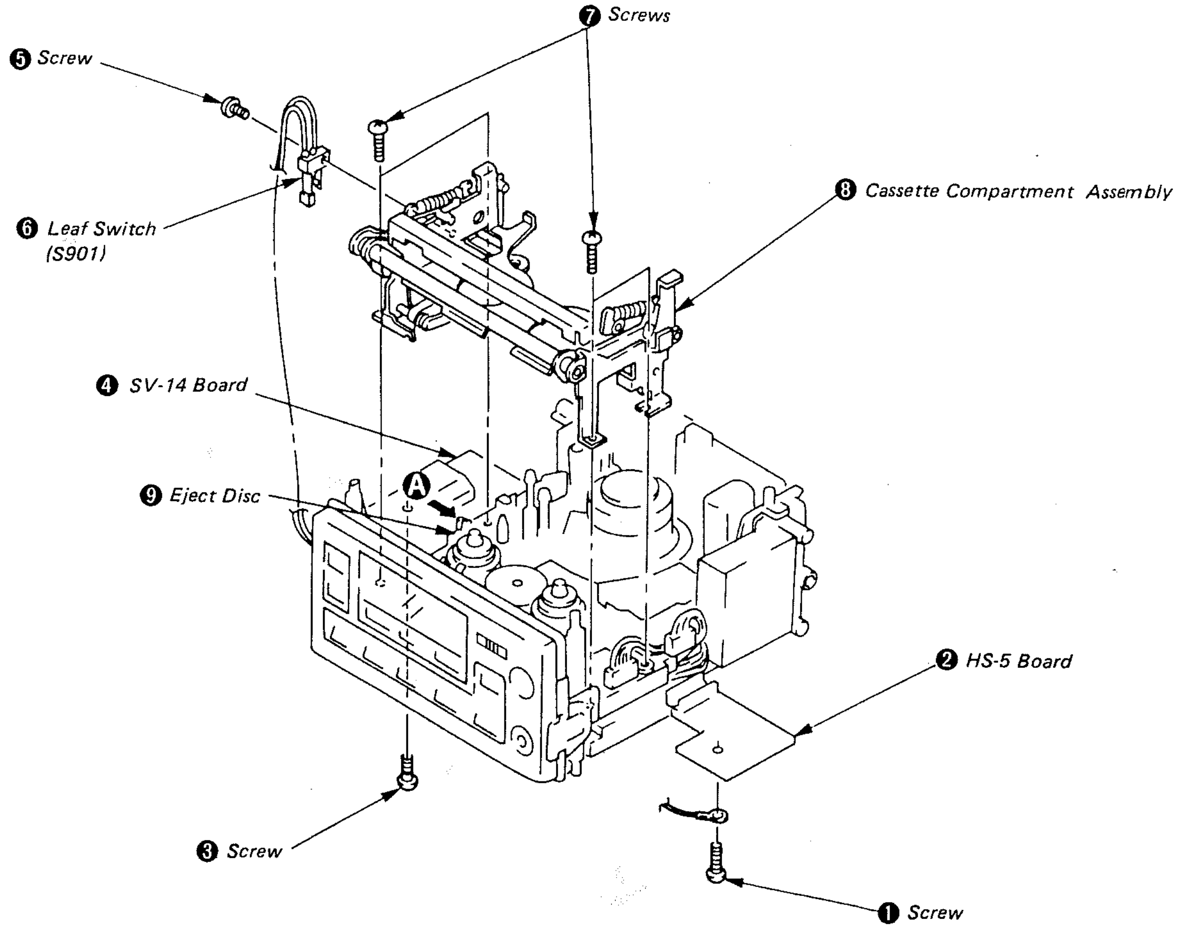
## 2-1. PREPARATION ITEMS FOR MECHANISM SECTION CHECKING, ADJUSTMENT AND REPLACEMENT

See 2. **DISASSEMBLY** to remove cabinets and boards.

### 2-1-1. Cassette Compartment Assembly

**1. Removal**

1) Remove the screw ❶ and open the HS-5 Board ❷ .
   (You will hear a tearing sound, but this causes no problem.)
2) Remove the screw ❸ and open the SV-14 Board ❹ .
3) Remove the screw ❺ and leaf switch (S901) ❻ .
4) Remove four screws ❼ and cassette compartment assembly ❽ . (See Fig. 2-1.)



❼ Screws
❺ Screw
❽ Cassette Compartment Assembly
❻ Leaf Switch (S901)
❹ SV-14 Board
❾ Eject Disc
Ⓐ
❷ HS-5 Board
❸ Screw
❶ Screw

Fig. 2-1

**2. Remounting**

1) Remount the cassette compartment assembly ❽ and tighten the screw ❼ referring to Fig. 2-2. (Push the eject disc ❾ toward the arrow Ⓐ to avoid the disc hitting the cassette compartment assembly.) (See Fig. 2-2.)
2) Remount the leaf switch (S901) ❻ with a screw ❺. (See Fig. 2-1.)
3) Remount the SV-14 Board ❹ with a screw ❸. (See Fig. 2-1.)
4) Remount the HS-5 Board ❷ with a screw ❶. (See Fig. 2-1.)

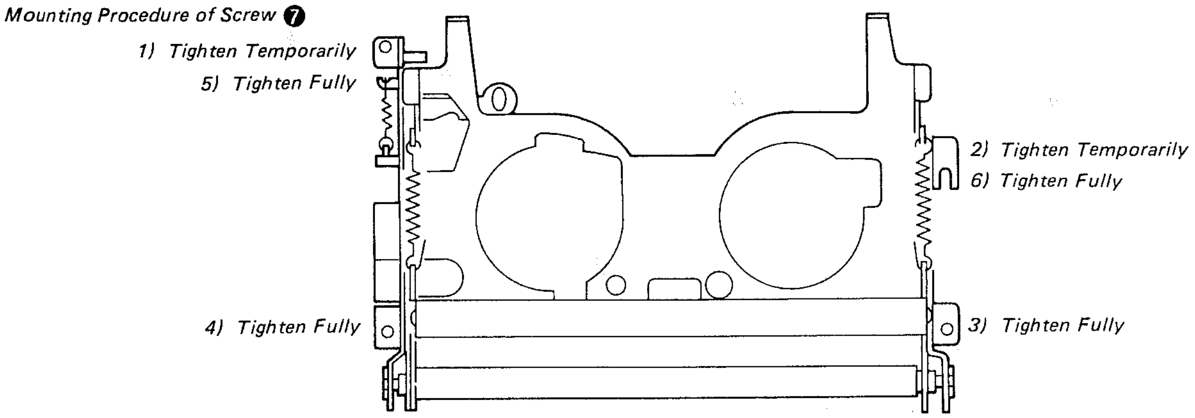

Mounting Procedure of Screw ❼
1) Tighten Temporarily
5) Tighten Fully
2) Tighten Temporarily
6) Tighten Fully
4) Tighten Fully
3) Tighten Fully

*Fig. 2-2*

### 2-1-2. Operating without Cassette Compartment Assembly and Tape

**Note:** Be care that the set may not operate if there is a strong light source near the set.
Turn off power, then turn on when the eject lamp flashes.

**1. Loading**

1) Connect the power supply ❶ and turn on power.
2) Place a tape on the pin of the RECOG SW assembly ❷.
3) Turn on the leaf switch (S901) ❸. (See Fig. 2-3.)

**2. Play back**

1) Take the steps required in 1.
2) Place a rubber band ❹ between the S and T reels.
3) Cover a cap ❺ on the LED assembly.
4) Press the PLAYBACK button. Push the tension regulator arm assembly ❻ toward the arrow Ⓐ when the T reel starts rotating. (The tension regulator band is released, and the S reel rotates.)
5) Press the STOP button to stop. (See Fig. 2-3.)

**3. Recording**

1) Take the steps required in 1.
2) Place a rubber band ❹ between the S and T reels.
3) Cover a cap ❺ on the LED assembly.
4) Press the RECORD button. Push the tension regulator arm assembly ❻ toward the arrow Ⓐ when the T reel starts rotating. (The tension regulator band is released, and the S reel rotates.)
5) Press the STOP button to stop. (See Fig. 2-3.)

**4. Ejecting**

1) Press the EJECT button.

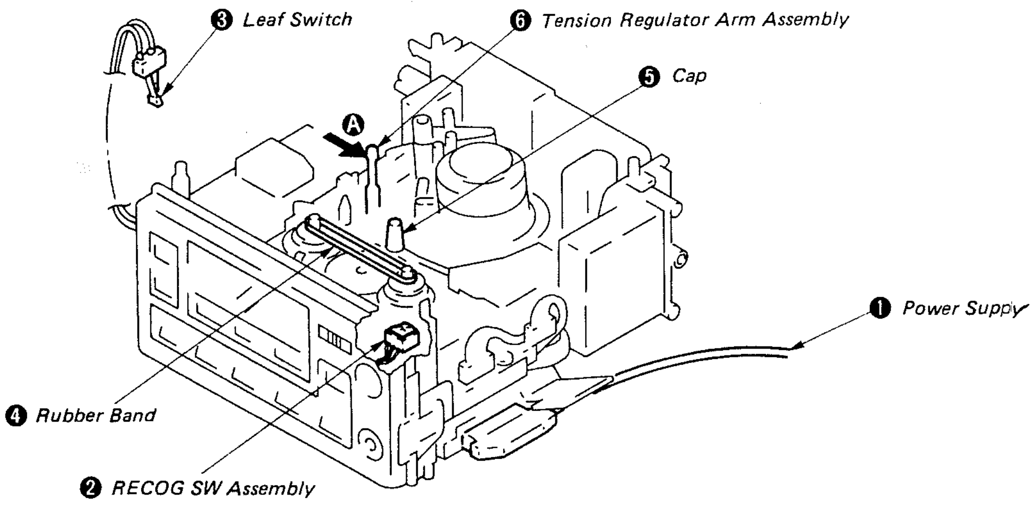

❸ Leaf Switch
❻ Tension Regulator Arm Assembly
❺ Cap
Ⓐ
❶ Power Suppy
❹ Rubber Band
❷ RECOG SW Assembly

*Fig. 2-3*

### 2-1-3. Mode Selector Operation

**1. Selector Parts (External View)**

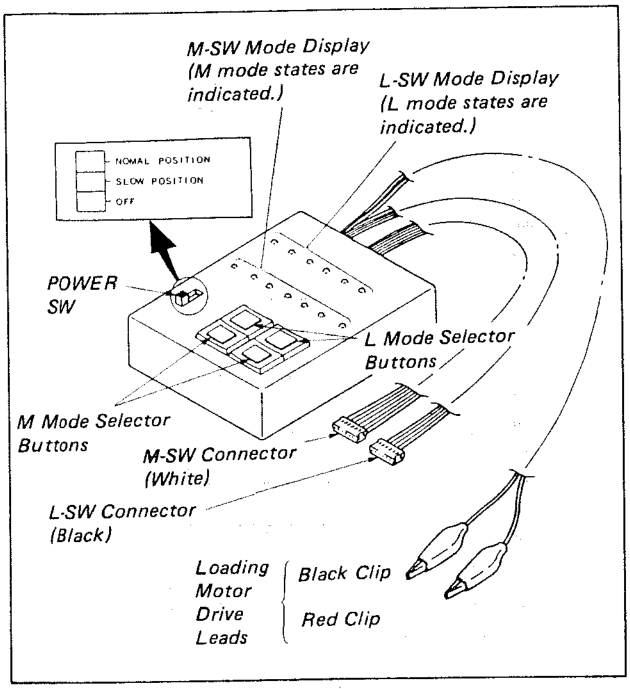

M-SW Mode Display
(M mode states are indicated.)
L-SW Mode Display
(L mode states are indicated.)
NOMAL POSITION
SLOW POSITION
OFF
POWER SW
L Mode Selector Buttons
M Mode Selector Buttons
M-SW Connector (White)
L-SW Connector (Black)
Loading Motor Drive Leads
Black Clip
Red Clip

*Fig. 2-4*

**2. Connection**

1) Plug the M-SW connector (6P connector, 6 harnesses, white) to the MS-4 Board (CN905) of the set.
2) Plug the L-SW connector (6P connector, 4 harnesses, black) to the LS-9 Board (CN904) of the set.
3) Connect each of red and black clip of the loading motor to each of red and gray loading motor drive lead wire, respectively. (See Fig. 2-4.)

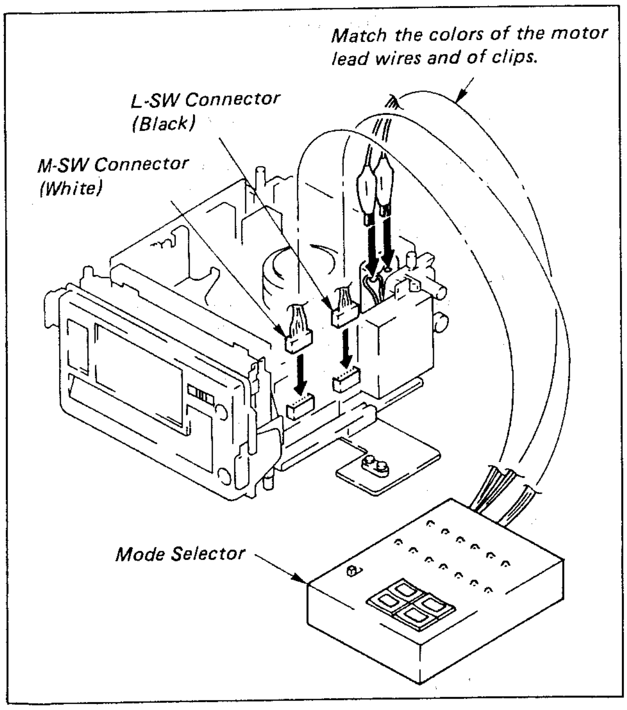

Match the colors of the motor lead wires and of clips.
L-SW Connector (Black)
M-SW Connector (White)
Mode Selector

*Fig. 2-5*

**3. Precautions**

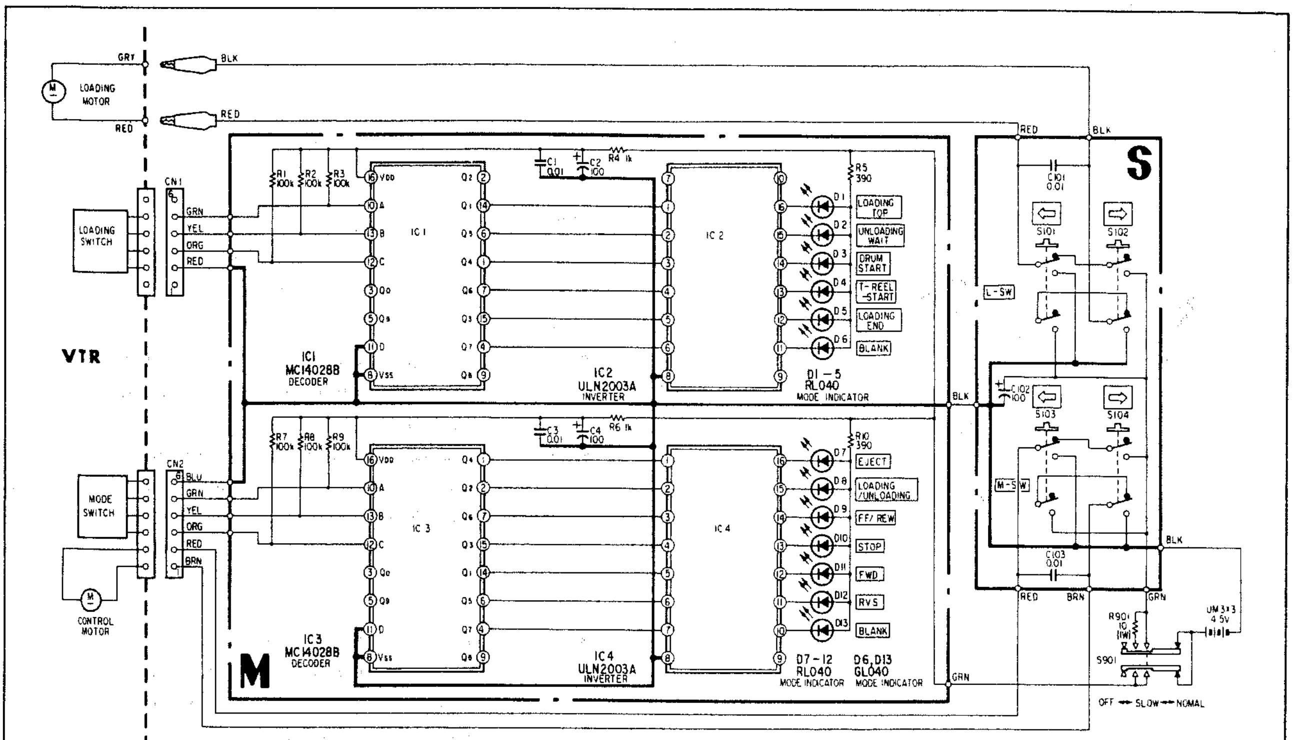
1) Make sure to set the M-SW mode to LOADING/UNLOADING when operating L-SW.
2) Make sure to set the L-SW mode to TOP or END when operating M-SW.

**4. Operation**

"BLANK" lights if each mode state is not set up during selection regardless of the L or M mode.

1) L Mode
    - Lighted to right sequentially from LOADING TOP to LOADING END when the righthand side button of the L mode selector buttons is kept pressing.
    - Keep pressing the selector button on the lefthand side to set up the desired mode in order to change from LOADING END to LOADING TOP.
    - The L mode operates more slowly in the slow position than in the normal position.
2) M Mode
    - Set L-SW to LOADING TOP to eject.
    - Set L-SW to LOADING END to change from FF/REW to RVS or from RVS to FF/REW.
    - Keep pressing the righthand side selector button of the M MODE to light to right sequentially from EJECT to RVS.
    - Keep pressing the selector button on the lefthand side to set up the desired mode in order to change from RVS to EJECT.

## 5. Mode Selector Schematic Diagram


GRY
BLK
LOADING MOTOR
RED
LOADING SWITCH
CN1
GRN
YEL
ORG
RED
VTR
MODE SWITCH
CN2
BLU
BRN
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
C1 0.01
C2 100
R4 1k
IC1
MC14028B
DECODER
IC2
ULN2003A
INVERTER
R5 390
D1
D2
D3
D4
D5
D6
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
D1 - 5
RL040
MODE INDICATOR
R7 100k
R8 100k
R9 100k
C3 0.01
C4 100
R6 1k
IC3
MC14028B
DECODER
IC4
ULN2003A
INVERTER
R10 390
D7
D8
D9
D10
D11
D12
D13
EJECT
LOADING /UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
D7 - 12
RL040
MODE INDICATOR
D6, D13
GL040
MODE INDICATOR
M
S
C101 0.01
S101
S102
L-SW
C102 100
S103
S104
M-SW
C103 0.01
BLK
RED
BRN
GRN
R901 10 (1W)
S901
UM3×3 4.5V
OFF ⟷ SLOW ⟷ NOMAL

M-SW (IC 3)

| DECODER INPUT | | | MODE | LED NO. |
|---|---|---|---|---|
| C | B | A | | |
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | FWD | D11 |
| 0 | 1 | 0 | LOADING/UNLOADING | D8 |
| 0 | 1 | 1 | STOP | D10 |
| 1 | 0 | 0 | EJECT | D7 |
| 1 | 0 | 1 | RVS | D12 |
| 1 | 1 | 0 | FF/REW | D9 |
| 1 | 1 | 1 | BLANK | D13 |

0 : INPUT LEVEL L
1 : INPUT LEVEL H

L-SW (IC 1)

| DECODER INPUT | | | MODE | LED NO. |
|---|---|---|---|---|
| C | B | A | | |
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | LOADING TOP | D 1 |
| 0 | 1 | 0 | | |
| 0 | 1 | 1 | LOADING END | D 5 |
| 1 | 0 | 0 | DRUM START | D 3 |
| 1 | 0 | 1 | UNLOADING WAIT | D 2 |
| 1 | 1 | 0 | T-REEL-START | D 4 |
| 1 | 1 | 1 | BLANK | D 6 |

| SWITCH | | DIRECTION OF MOTOR REVOLUTION |
|---|---|---|
| ⇦ | ⇨ | |
| OFF | OFF | STOP |
| ON | OFF | ⇦ |
| OFF | ON | ⇨ |

⇦ L-SW LOADING END ← LOADING TOP
M-SW RVS ← EJECT

⇨ L-SW LOADING TOP ← LOADING END
M-SW EJECT ← RVS

## 6. Mode Selector Parts List

| Ref. No. | Part No. | Description | | |
|---|---|---|---|---|
| | | **CAPACITOR** | | |
| C1 | 1-108-579-00 | MYLAR | 0.01µF | 50V |
| C2 | 1-123-333-00 | ELECT | 100µF | 24V |
| C3 | 1-108-579-00 | MYLAR | 0.01µF | 50V |
| C4 | 1-123-333-00 | ELECT | 100µF | 24V |
| C101 | 1-108-579-00 | MYLAR | 0.01µF | 50V |
| C102 | 1-123-333-00 | ELECT | 100µF | 24V |
| C103 | 1-108-597-00 | MYLAR | 0.01µF | 50V |
| | | **DIODE** | | |
| D1 | 8-719-812-31 | DIODE | TLR123 | |
| D2 | 8-719-812-31 | DIODE | TLR123 | |
| D3 | 8-719-812-31 | DIODE | TLR123 | |
| D4 | 8-719-812-31 | DIODE | TLR123 | |
| D5 | 8-719-812-31 | DIODE | TLR123 | |
| D6 | 8-719-812-33 | DIODE | TLG123A | |
| D7 | 8-719-812-31 | DIODE | TLR123 | |
| D8 | 8-719-812-31 | DIODE | TLR123 | |
| D9 | 8-719-812-31 | DIODE | TLR123 | |
| D10 | 8-719-812-31 | DIODE | TLR123 | |
| D11 | 8-719-812-31 | DIODE | TLR123 | |
| D12 | 8-719-812-31 | DIODE | TLR123 | |
| D13 | 8-719-812-33 | DIODE | TLG123A | |

| Ref. No. | Part No. | Description | | |
|---|---|---|---|---|
| | | **IC** | | |
| IC1 | 8-759-240-28 | IC | TC4028BP | |
| IC2 | 8-759-120-03 | IC | µPA2003A | |
| IC3 | 8-759-240-28 | IC | TC4028BP | |
| IC4 | 8-759-120-03 | IC | µPA2003A | |
| | | **RESISTOR** | | |
| R1 | 1-247-179-00 | CARBON | 100K | ¼W |
| R2 | 1-247-179-00 | CARBON | 100K | ¼W |
| R3 | 1-247-179-00 | CARBON | 100K | ¼W |
| R4 | 1-247-131-00 | CARBON | 1K | ¼W |
| R5 | 1-247-121-00 | CARBON | 390 | ¼W |
| R6 | 1-247-131-00 | CARBON | 1K | ¼W |
| R7 | 1-247-179-00 | CARBON | 100K | ¼W |
| R8 | 1-247-179-00 | CARBON | 100K | ¼W |
| R9 | 1-247-179-00 | CARBON | 100K | ¼W |
| R10 | 1-247-121-00 | CARBON | 390 | ¼W |
| R901 | 1-214-594-00 | METAL | 10 | 1W |

## 2-2. PERIODIC CHECKING AND MAINTENANCE ITEMS

Maintenance and periodic checking should be performed as described below to demonstrate the set functions and performance fully, as well as for the sake of the machine and tapes. Provide the following maintenance work after a repair regardless of the duration of operation by the user.

### 2-2-1. Cleaning Rotary Drum Assembly

1) Lightly place chamois leather (Ref. No. J-2) moisted with a cleaning solution (Ref. No. J-1) on the rotary upper drum assembly and slowly rotate the rotary upper drum assembly counterclockwise by a finger to clean.

**Note:** Do not rotate the drum by the motor by turning on power or by rotating clockwise by a finger.
The chances of the head chip being damaged are very high if chamois leather is moved perpendicular to the head chip. Absolutely no cleaning method other than that described above should be used.

### 2-2-2. Tape Guide System Cleaning

1) Set up the cassette compartment assembly in an eject state and clean the tape guide system (No. 1 to 11 guides, capstan spindle and pinch roller) with chamois leather moisted with a cleaning solution. (See Fig. 2-6.)

### 2-2-3. Drive System Cleaning

1) Clean the drive system (timing belt and reel table surfaces) with a cloth moisted with a cleaning solution.

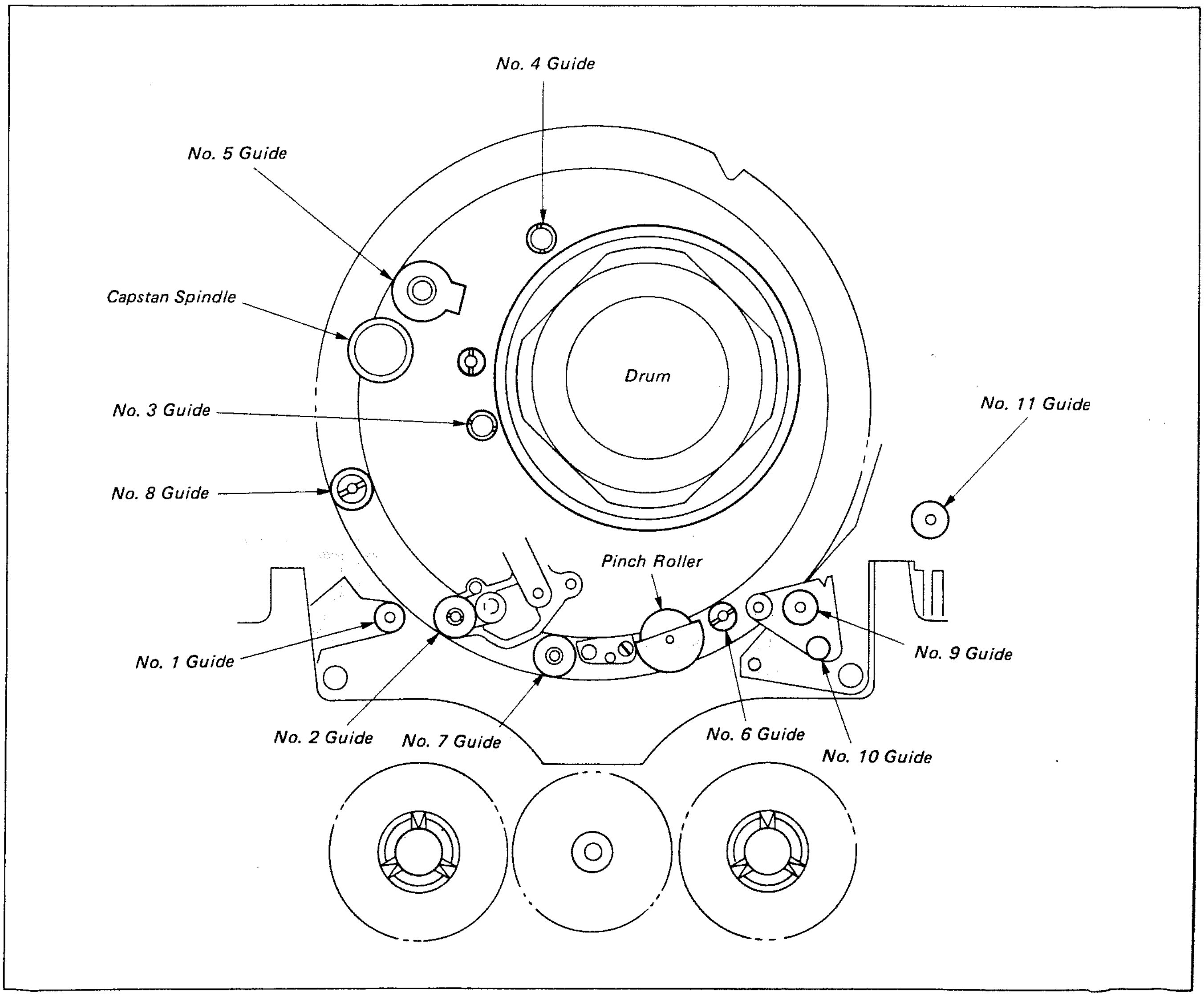

No. 4 Guide
No. 5 Guide
Capstan Spindle
No. 3 Guide
No. 8 Guide
Drum
No. 11 Guide
Pinch Roller
No. 9 Guide
No. 1 Guide
No. 2 Guide
No. 7 Guide
No. 6 Guide
No. 10 Guide

*Fig. 2-6*

### 2-2-4. Periodic Check Items

Provide the following maintenance and checking depending on the user use duration.

○ Cleaning ◎ Oiling ★ Replacement ☆ Checking

| Maintenance and Check Part | | Hours in Operation (h) | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 | 1,000 | 1,500 | 2,000 | 2,500 | 3,000 | 3,500 | 4,000 | 4,500 | 5,000 | |
| Tape Guide System | Cleaning of tape running surfaces | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Avoid oil |
| | Cleaning and demagnetizing of rotary drum assembly | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Avoid oil |
| Drive System | L motor belt | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ★ | ○ | ○ | 3-686-546-01<br>Replace here, or every two years |
| | Timing belt | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 3-686-646-01 |
| | Plunger solenoid | — | — | — | ○ | — | — | — | ○ | — | — | 1-454-377-11 |
| | Capstan bearing | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | Absolutely avoid oil on tape running surfaces. |
| | Loading motor | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | A-7040-009-A |
| | Control motor | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | 8-835-110-01 |
| Performance Checking | Abnormal sound | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | |
| | Back tension measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | Brake system | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | FWD / RVS Torque measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |

**Note:** Replace parts in overhaul taking the foregoing items into consideration.

**Note:** SONY Oil

- Be sure to use SONY oil, always. (Various kinds of trouble may occur if the oil viscosity, etc. change.)
  SONY Oil. Parts No. 7-661-088-61
- Be sure to use SONY oil completely free from dust, etc. mixed in it when oiling the bearings. (The bearings may wear and may be seized if oil mixed with dust, etc. is used.)
- One drop of oil is approximately the amount of oil on tip of a stick 2mm in diameter as shown in the diagram. (See Fig. 2-7.)

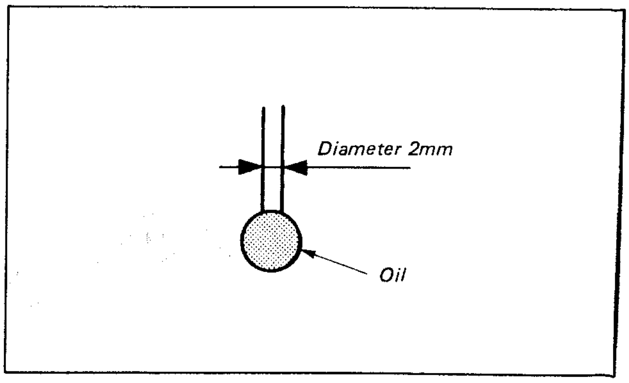


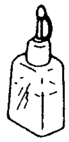
*Fig. 2-7*

### 2-2-5. Summary of Servicing Tools

| Ref. No. | Name | Part Code | Fixture No. | Use |
|---|---|---|---|---|
| J-1 | Cleaning Fluid | Y-2031-001-0 | —— | |
| J-2 | Chamois Cloth | 2-034-697-00 | —— | |
| J-3 | Head Demagnetizer | | —— | |
| J-4 | Dental Mirror (handle)<br>Dental Mirror (mirror) | J-6080-029-A<br>J-6080-030-1 | SL-5052 | Tape Path |
| J-5 | Alignment Tape (WR5-1C) | 8-967-995-06 | | Tape Path |
| J-6 | Dial Tension Gauge | J-6080-827-A | | Measuring torques |
| J-7 | Tension measuring reel | J-6080-831-A | | With $\phi$30 tape |
| J-8 | Tension measuring reel | J-6080-832-A | | With $\phi$16 string |
| J-9 | No. 10 gear phase matching | J-6080-823-A | GD-2047 | |
| J-10 | Rotary DRUM JIG | (Packaged with the rotary upper drum for repairs and replacement.) | | |
| J-11 | No. 6 Guide Lock JIG | J-6080-826-A | | |
| J-12 | FWD, RVS Take-up Torque Cassette | J-6080-824-A | GD-2086 | |
| J-13 | Mode Selector | J-6080-825-A | | The whole |

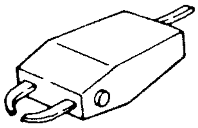
**Other equipment:** Oscilloscope
Analog Tester (20kΩ)

J-1

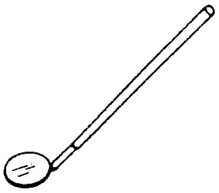


J-2

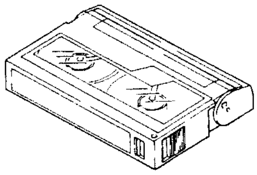
J-3



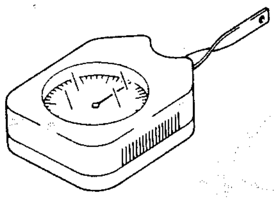
J-4



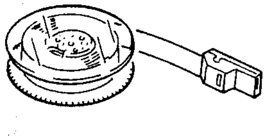
J-5



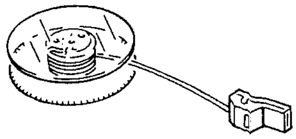
J-6



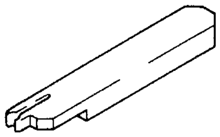
J-7



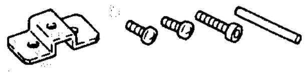
J-8



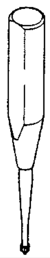
J-9



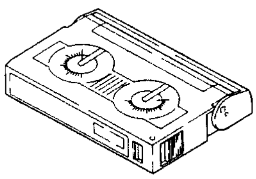
J-10 (Packaged with the rotary upper drum for repairs and replacement.)



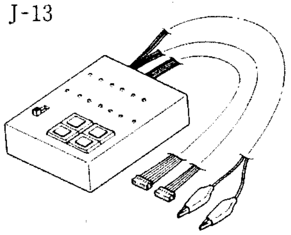
J-11



J-12



J-13



## 2-3. MECHANISM SECTION CHECKING, ADJUSTMENT AND REPLACEMENT

**Note:**
- Use a mode selector (Ref. No. J-13) to check, adjust, and replace this mechanism section.
- The modes in ☐ are set up by pressing the mode selector buttons.

### 2-3-1. S Reel Table Assembly

**1. Removal**

1) Remove the cassette compartment assembly as instructed in 2-1-1.
2) Set up the FF/REW mode.
3) Remove the screw ❶ and reel table stopper ❷ .
4) Remove the REV brake ❸ .
5) Remove the S reel table assembly ❹ . (See Fig. 2-8.)

**Note:** Be sure to hold the upper click part in hand when removing. (See the Note in Fig. 2-8.)

**2. Remounting**

1) Oil half a drop of oil on the upper spherical part of the spindle ❺ .
2) Move the S main brake assembly ❻ toward the arrow Ⓐ .
3) Remount the S reel table assembly ❹ not to touch the tension regulator band assembly ❼ .

**Note:** Be sure to hold the upper click part in hand when mounting. (See the Note in Fig. 2-8.)

4) Remount the REV brake ❸ .
5) Remount the reel table stopper ❷ and tighten the screw ❶ . (See Fig. 2-8.)
6) Set up the LOADING/UNLOADING mode.
7) Remount the cassette compartment assembly as instructed in 2-1-1.
8) Adjust the FWD back tention as instructed in 2-3-22.

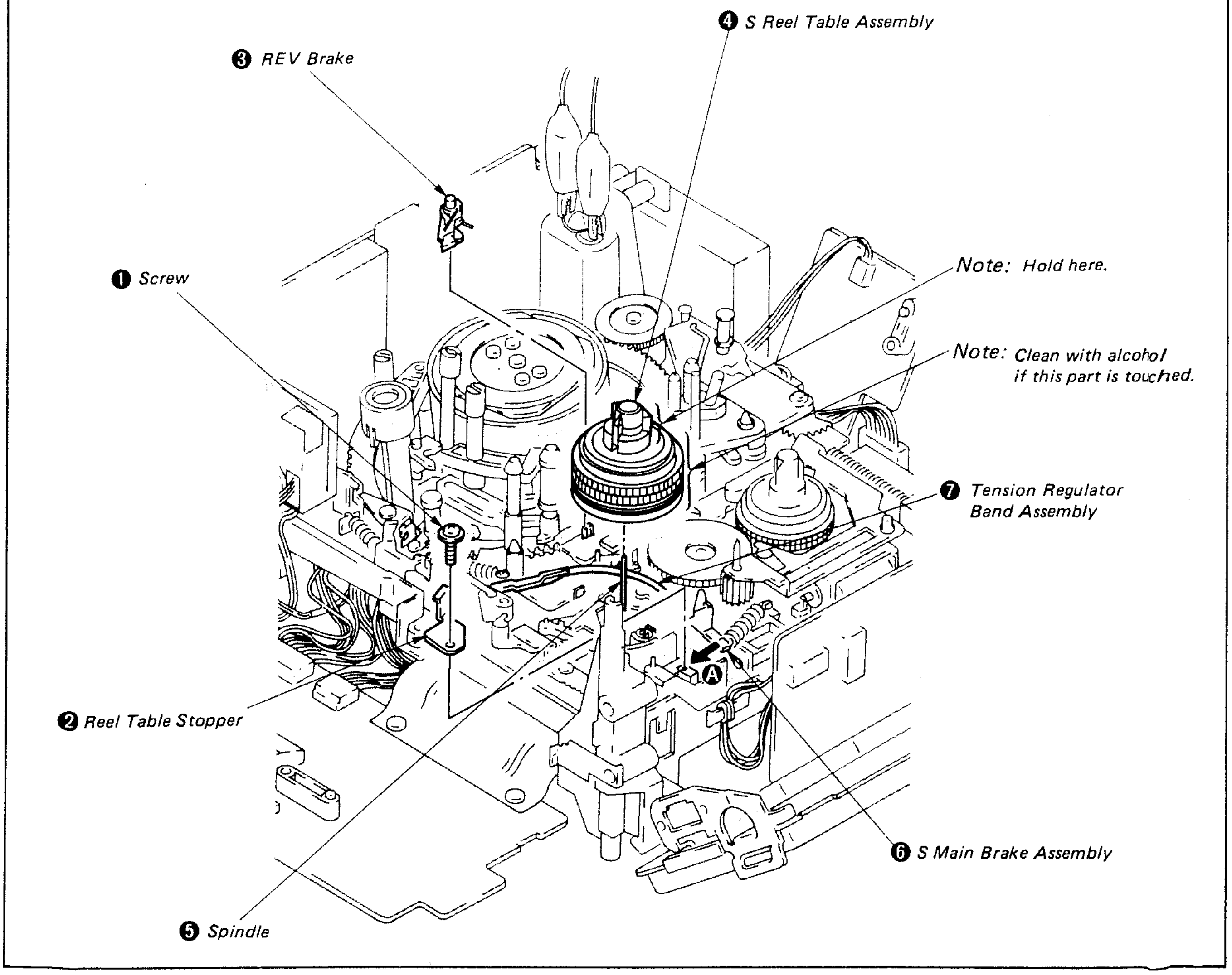

❹ S Reel Table Assembly
❸ REV Brake
❶ Screw
Note: Hold here.
Note: Clean with alcohol if this part is touched.
❼ Tension Regulator Band Assembly
Ⓐ
❷ Reel Table Stopper
❻ S Main Brake Assembly
❺ Spindle

Fig. 2-8

### 2-3-2. T Reel Table Assembly

#### 1. Removal

1) Remove the cassette compartment assembly as instructed in 2-1-1.
2) Set up the UNLOADING WAIT mode.
3) Hook the spring ❷ tying the T soft brake ❶ on the click of the lock slider.
4) Remove the stopper washer ❸ and T soft brake ❶ .
5) Set up the EJECT mode.
6) Move the drive gear (B) ❹ toward the arrow Ⓐ .
7) Remove the T reel table assembly ❺ . (See Fig. 2-9.)

**Note:** Be sure to hold the upper click part in hand when removing. (See the Note in Fig. 2-8.)

#### 2. Remounting

1) Oil half a drop of oil on the upper spherical part of the spindle ❻ .
2) Move the drive gear (B) ❹ toward the arrow Ⓐ . (Check that the EJECT mode is set up.)
3) Remount the T reel table assembly ❺ .
4) Remount the T soft brake ❶ and stop washer ❸ .
5) Rehook the spring ❷ on the click of the T soft brake ❶ . (See Fig. 2-9.)
6) Set up the LOADING TOP and LOADING/UNLOADING modes.
7) Remount the cassette compartment assembly as instructed in 2-1-1.

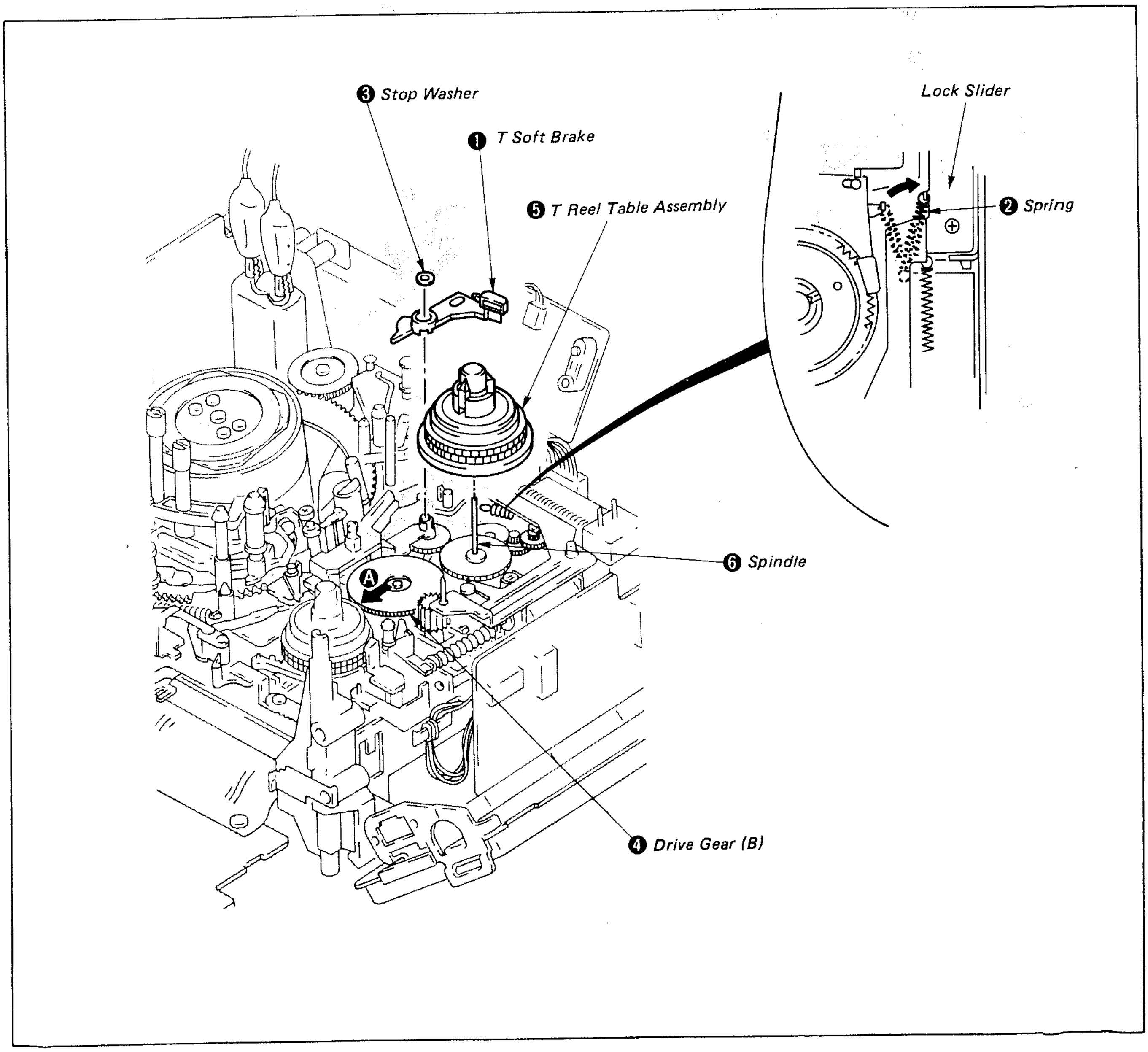


Fig. 2-9

### 2-3-3. Pinch Press Arm Assembly

**1. Removal**

1) Hook the spring ❶ on the pinch press arm assembly ❷ .
2) Remove the stop washer ❸ and pinch press arm assembly ❷ . (See Fig. 2-10.)

**2. Remounting**

1) Oil half a drop of oil on the spindle ❹ .
2) Remount the pinch press arm assembly ❷ and stop washer ❸ .
3) Rehook the spring ❶ on the tension regulator spring hook assembly ❺ . (See Fig. 2-10.)

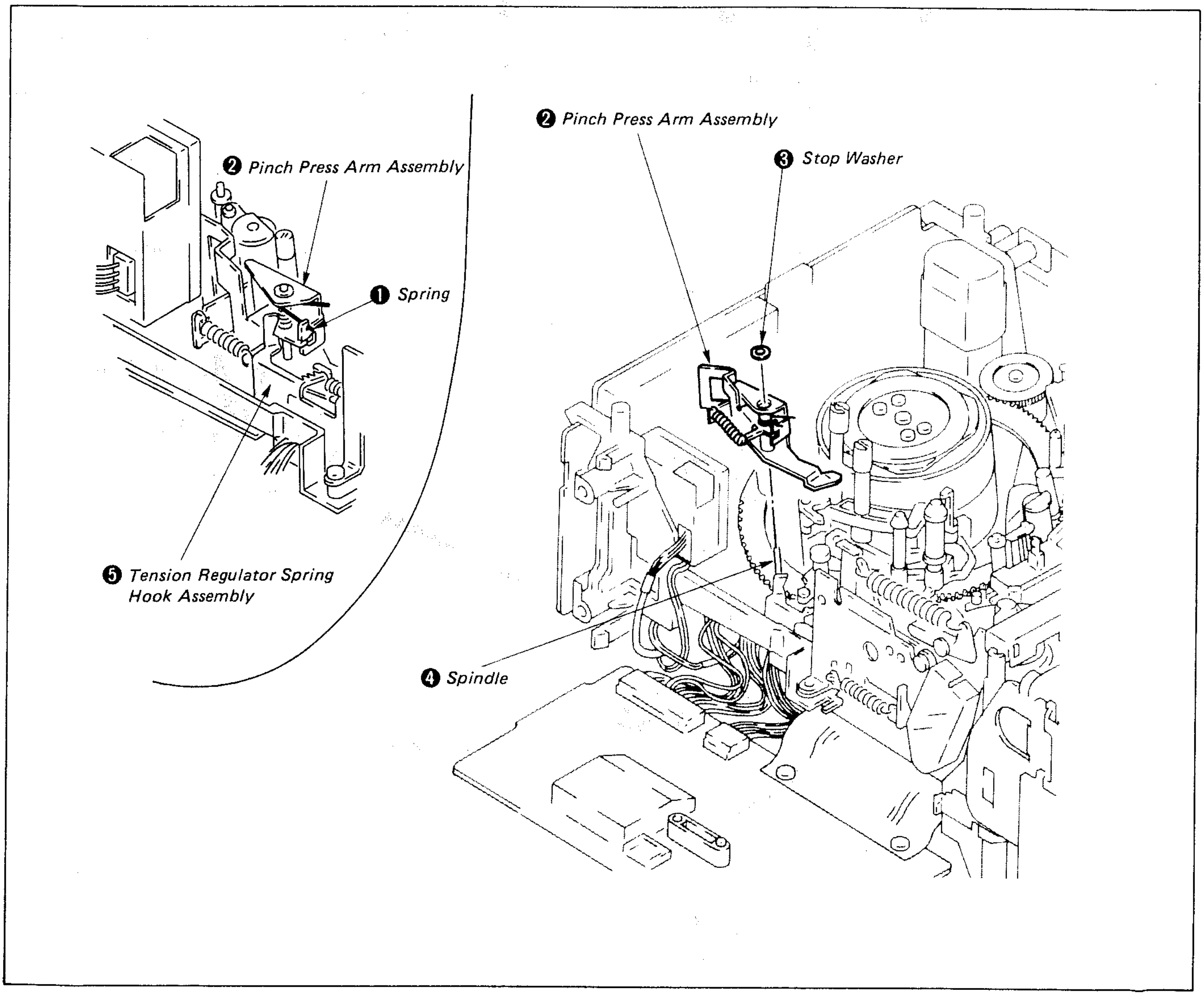

❷ Pinch Press Arm Assembly
❶ Spring
❺ Tension Regulator Spring Hook Assembly
❷ Pinch Press Arm Assembly
❸ Stop Washer
❹ Spindle

Fig. 2-10

## 2-3-4. Tension Regulator Arm Assembly

### 1. Removal

1) Remove the cassette compartment assembly as instructed in 2-1-1.
2) Change the hooking position of the spring as instructed in 1) of Removal in 1. of 2-3-3.
3) Remove the spring ❶ . (Write down the spring hooking position).
4) Remove the screw ❷ and tension regulator spring hook assembly ❸ .
5) Set up the FF/REW mode.
6) Disengage the click ❹ of the tension regulator band assembly.
7) Remove the tension regulator arm assembly ❺ . (See Fig. 2-11.)

### 2. Remounting

1) Oil half a drop of oil on the spindle ❻ .
2) Remount the tension regulator arm assembly ❺ inserting the tension regulator load arm assembly pin ❼ in the cam groove on the rear side of the tension regulator arm assembly ❺ .
3) Reengage the tension regulator band assembly click ❹ . (Do not touch or deform the band.)
4) Set up the LOADING/UNLOADING mode.
5) Remount the tension regulator spring hook assembly ❸ and tighten the screw ❷ .
6) Rehook the spring ❶ in the previous position and lock the screw. (See Fig. 2-11.)
7) Rehook the spring as instructed in 3) of Remounting in 2. of 2-3-3.
8) Remount the cassette compartment assembly as instructed in 2-1-1.

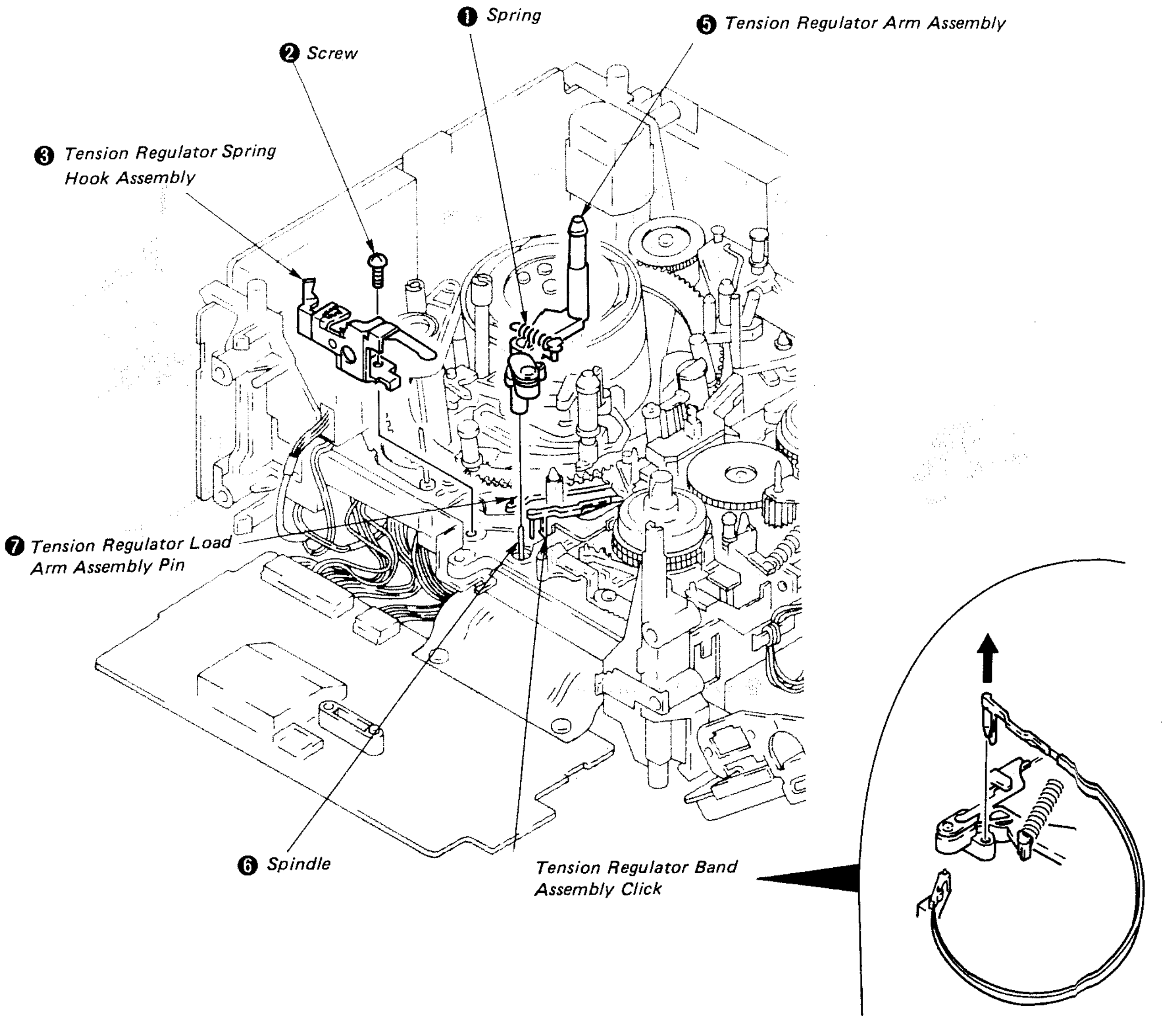

❶ Spring
❺ Tension Regulator Arm Assembly
❷ Screw
❸ Tension Regulator Spring Hook Assembly
❼ Tension Regulator Load Arm Assembly Pin
❻ Spindle
Tension Regulator Band Assembly Click

Fig. 2-11

### 2-3-5. Tension Regulator Band Assembly

**1. Removal**

1) Remove the S reel table assembly as instructed in 2-3-1.
2) Disengage the band arm assembly click ❶ .
3) Disengage the click ❷ and remove the tension regulator band assembly ❸ . (See Fig. 2-12.)

**2. Remounting**

1) Remount the tension regulator band assembly ❸ . (Do not touch or deform the band.)
2) Reengage the band arm assembly click ❶ . (See Fig. 2-12.)
3) Remount the S reel table assembly as instructed in 2-3-1.
4) Adjust the FWD back tension as instructed in 2-3-22.

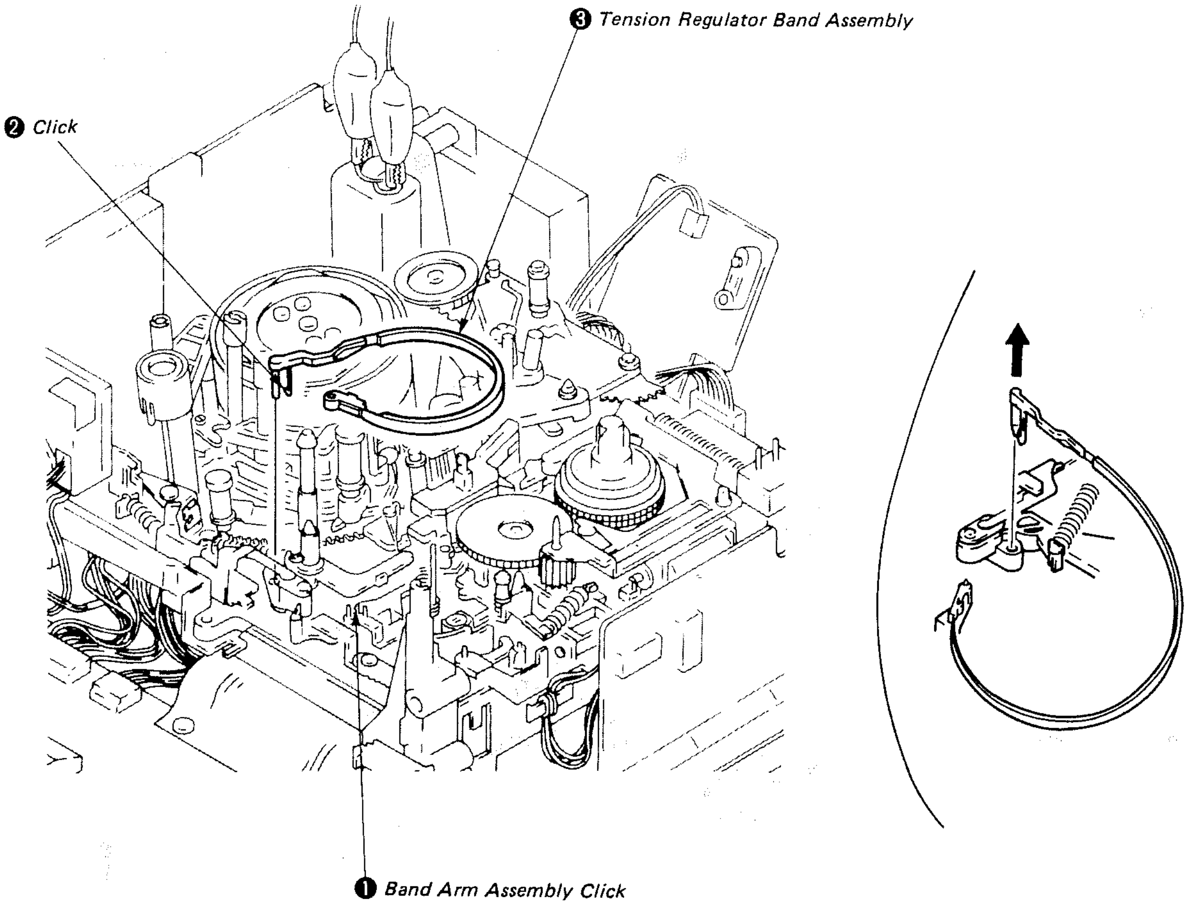

❸ Tension Regulator Band Assembly
❷ Click
❶ Band Arm Assembly Click

Fig. 2-12

## 2-3-6. Loading Motor Assembly

**1. Removal**

1) Open the MC-8 Board as instructed in 2. Removal in 2-10.
2) Remove the L motor belt ❶ .
3) Disconnect the connector ❷ CN516 (white) 2P from the RS-5 Board.
4) Remove the screw ❸ and loading motor assembly ❹ . (See Fig. 2-13.)

**2. Mounting**

1) Remove the loading motor shield plate from the loading motor assembly ❹ which had been mounted on the set.
2) Wind the loading motor shield plate removed in step 1) around the loading motor assembly ❹ . (See Fig. 2-14.)
3) Mount the loading motor assembly ❹ and tighten the two screws ❸ .
4) Remount the connector ❷ CN516 (white) 2P to the RS-5 Board.
5) Remount the L motor belt ❶ .
6) Reassemble the circuit board reversing the sequence.

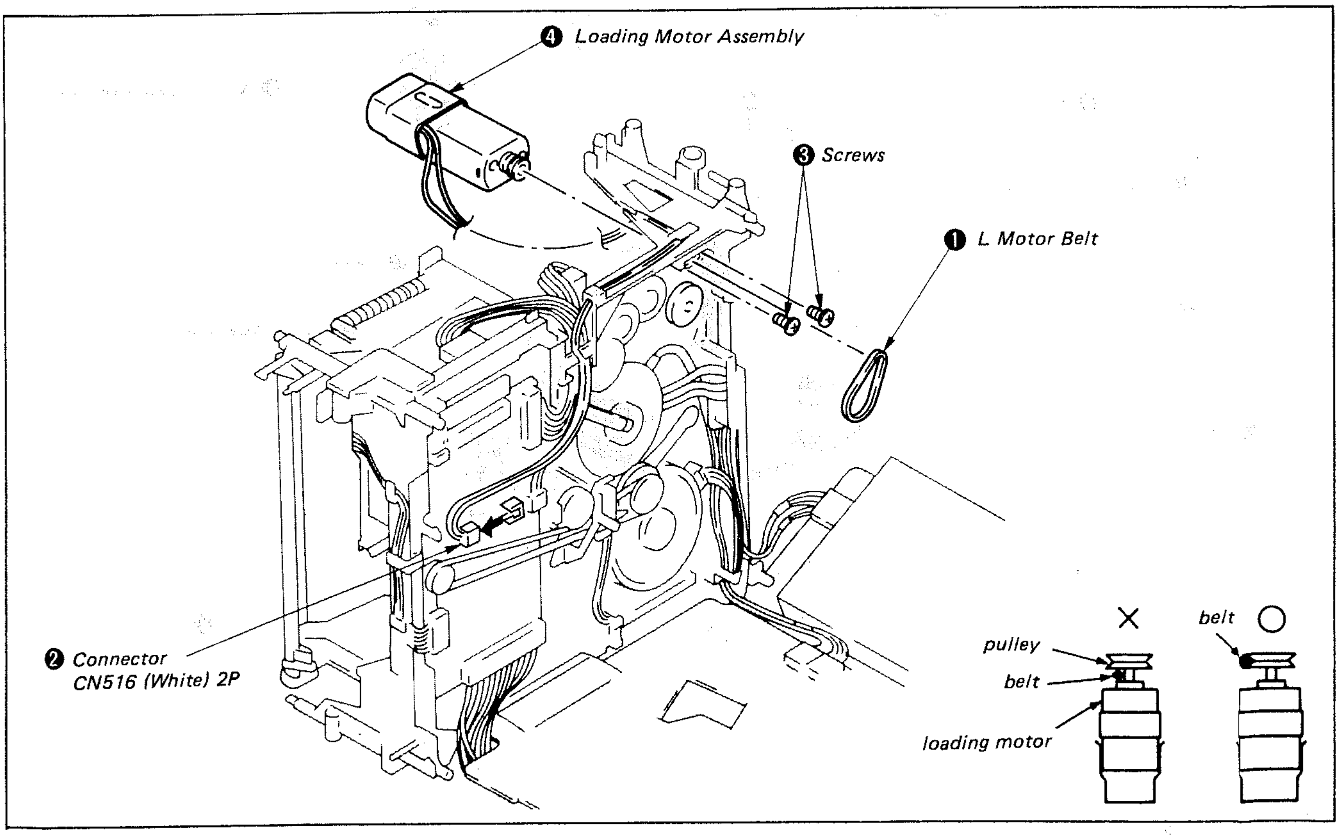
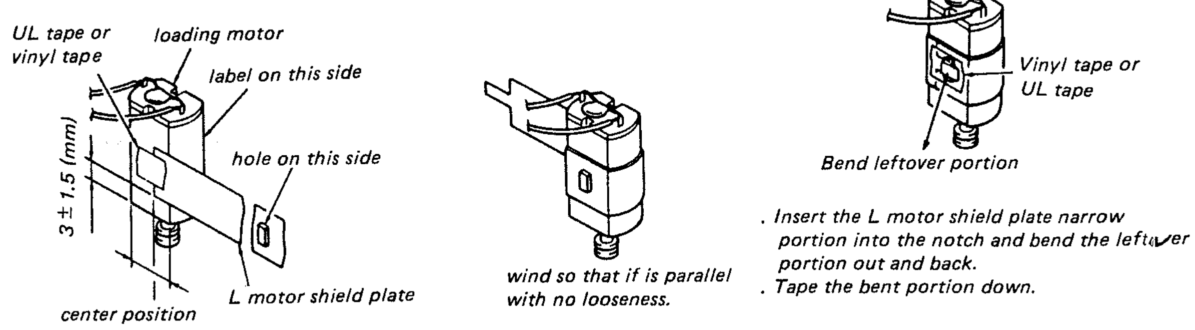

❹ Loading Motor Assembly
❸ Screws
❶ L Motor Belt
❷ Connector CN516 (White) 2P
×
○
pulley
belt
belt
loading motor

Fig. 2-13

Mounting diagram of loading motor shield plate


UL tape or vinyl tape
loading motor
label on this side
hole on this side
3±1.5 (mm)
center position
L motor shield plate
Vinyl tape or UL tape
Bend leftover portion

wind so that if is parallel with no looseness.

. Insert the L motor shield plate narrow portion into the notch and bend the leftover portion out and back.
. Tape the bent portion down.

Fig. 2-14

### 2-3-7. Loading Ring Assembly

**1. Removal**

1) Operate the mode selectors to move the guide base assembly ❶ to immediately before the lock and the No. 2 guide ❷ to the position where the screw of the ring stopper ❸ immediately before the lock. (Do not move the loading ring assembly ⓫ .)
2) Remove the stop washer ❹ and disengage the No. 10 gear assembly ❺ .
3) Remove the screw ❻ , roller retainer ❼ and roller ❽ .
4) Remove the two screws ❾ , ring stopper ❸ and roller ❿ .
5) Remove the loading ring assembly ⓫ in the arrow Ⓐ direction. (See Fig. 2-15.)

**Note:** Care should be taken not to strike the drum when removing the loading ring assembly ⓫ .

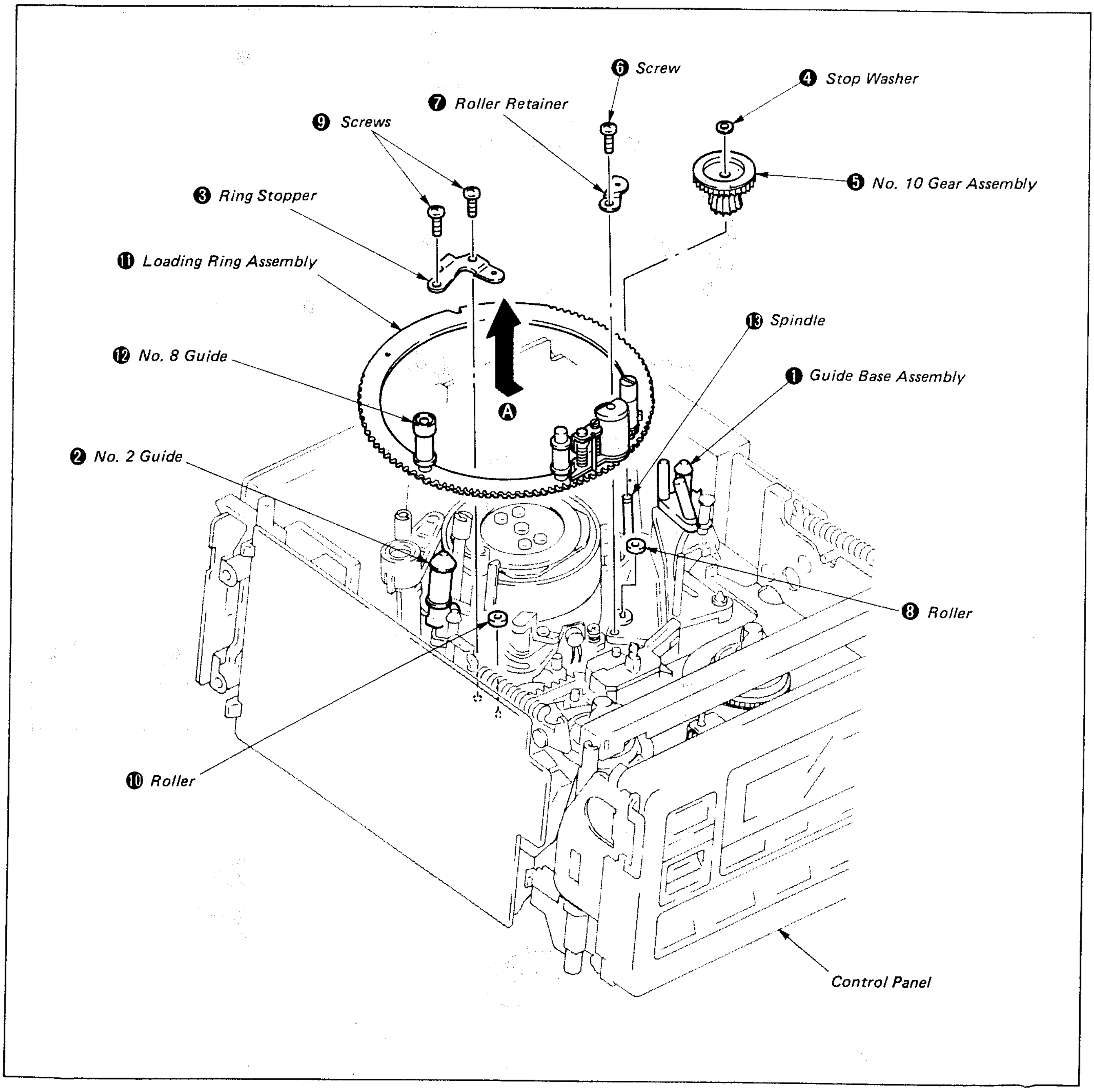

❻ Screw
❹ Stop Washer
❼ Roller Retainer
❾ Screws
❺ No. 10 Gear Assembly
❸ Ring Stopper
⓫ Loading Ring Assembly
⓭ Spindle
⓬ No. 8 Guide
❶ Guide Base Assembly
Ⓐ
❷ No. 2 Guide
❽ Roller
❿ Roller
Control Panel

Fig. 2-15

### 2. Remounting

1) Remount the loading ring assembly ⓫ in an unthreading condition (with the pinch roller moved to the control panel side). (Check that the loading ring assembly is in the condition of 1) of Removal.)
2) Remount the roller ❿ and ring stopper ❸ and tighten the two screws ❾. (The No. 8 guide ⓬ should be located near the control panel than the ring stopper ❸.)
3) Remount the roller ❽ and roller retainer ❼ and tighten the screw ❻. (Check that the loading ring assembly fits the three rollers.)
4) Oil half a drop of oil on the spindle ⓭. (See Fig. 2-15.)
5) Check that the tooth of the drive changer is engaging the dent of the L-SW assembly and plug the No. 10 gear phase alignment jig (Ref. No. J-9) (See Fig. 2-16.)
6) Remount the No. 10 gear ❺ and stop washer ❹ pressing the No. 8 guide ⓬ to the ring stopper ❸.
7) Pull out the No. 10 gear phase alignment jig.
8) Set up the LOADING TOP mode.

**Note:** Be sure to adjust the tape path as instructed in 2-4 after remounting.

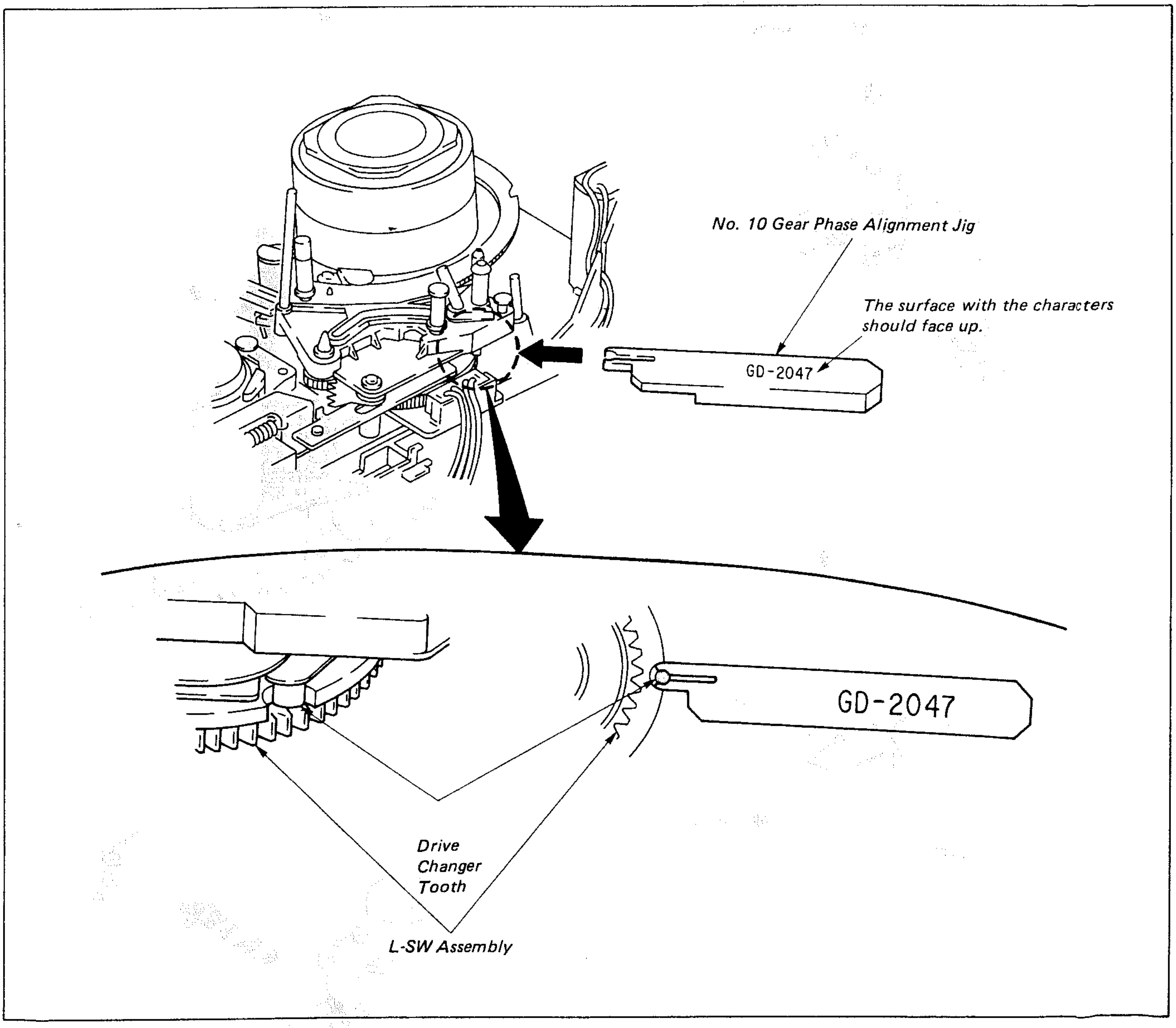

No. 10 Gear Phase Alignment Jig
The surface with the characters should face up.
GD-2047
GD-2047
Drive Changer Tooth
L-SW Assembly

Fig. 2-16

### 2-3-8. Pinch Roller Assembly

**1. Removal**

1) Remove the loading ring assembly as instructed in 2-3-7.
2) Remove the stop washer ❶ . (See Fig. 2-17.)
3) Change the hooking position of the spring ❸ on the No. 7 guide assembly ❷ . (See Fig. 2-18.)
4) Rotate the pinch roller assembly ❹ in the arrow Ⓐ direction. (See Fig. 2-19.)
5) Remove the pinch roller assembly ❹ toward the arrow Ⓑ . (See Fig. 2-20.)
6) Remove the spring ❸ . (See Fig. 2-21.)

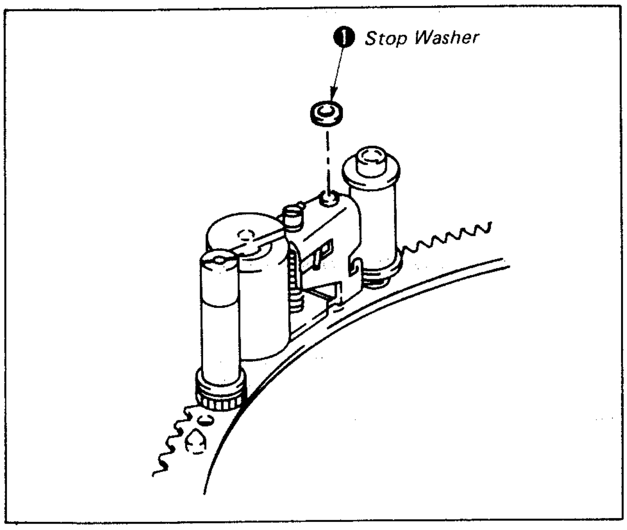

❶ Stop Washer

*Fig. 2-17*

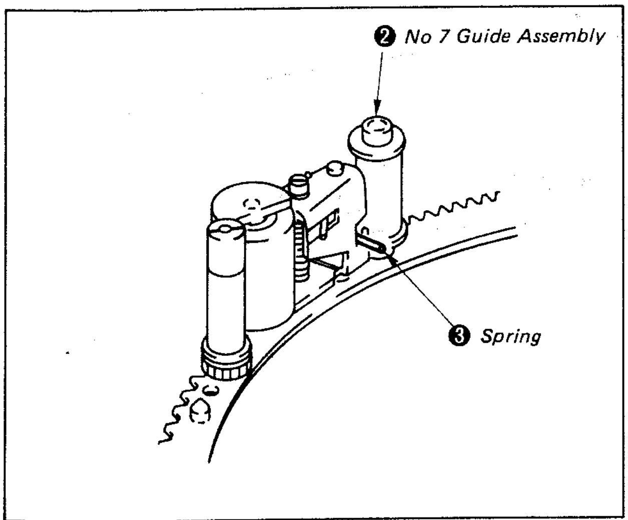

❷ No 7 Guide Assembly
❸ Spring

*Fig. 2-18*

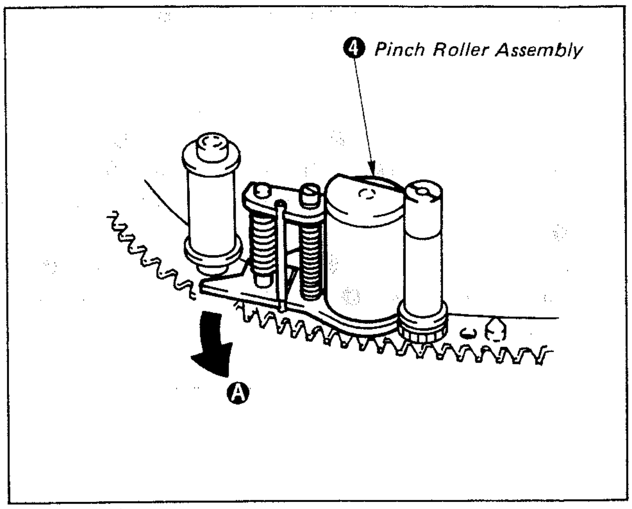

❹ Pinch Roller Assembly
Ⓐ

*Fig. 2-19*

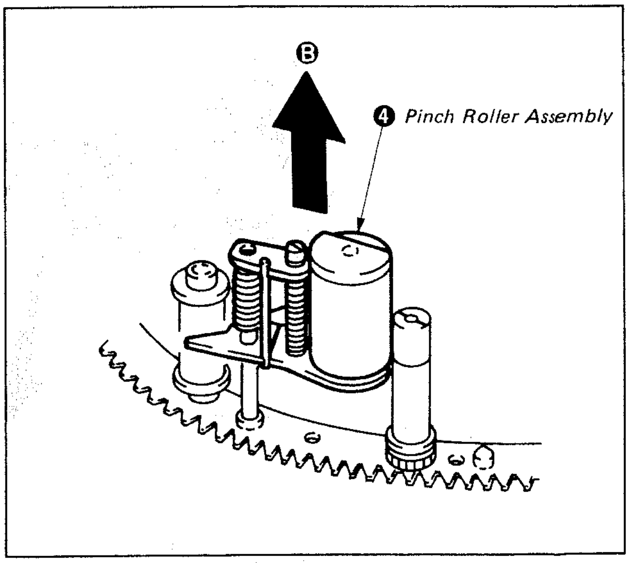

Ⓑ
❹ Pinch Roller Assembly

*Fig. 2-20*

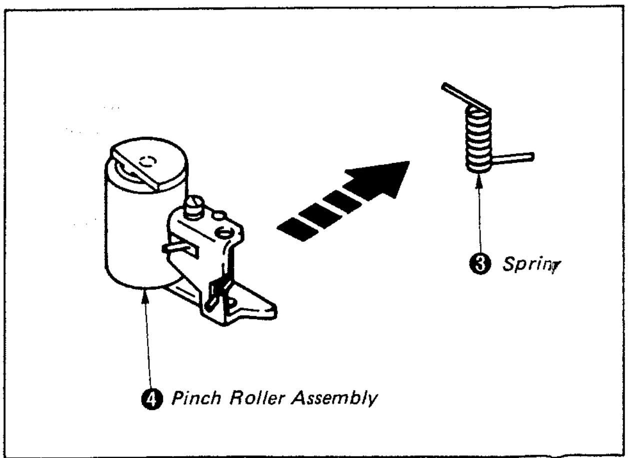

❸ Spring
❹ Pinch Roller Assembly

*Fig. 2-21*

## 2. Remounting

1) Rehook the spring ❸ . (See Fig. 2-22.)
2) Reinsert a thin object like a clip ❺ into the pinch roller assembly hole ❻ . (See Fig. 2-23 and 24.)
3) Recontact the loading ring assembly spindle ❼ with the tip of the clip ❺ and fit the pinch roller assembly ❹ . (See Fig. 2-25 and 26.)
4) Rehook the spring on the No. 7 guide assembly ❷ . Confirm that the spring is hooked to part Ⓐ at this time. (See Fig. 2-27.)
5) Remount the stop washer ❶ . (See Fig. 2-28.)
6) Remount the loading ring assembly as instructed in 2-3-7.

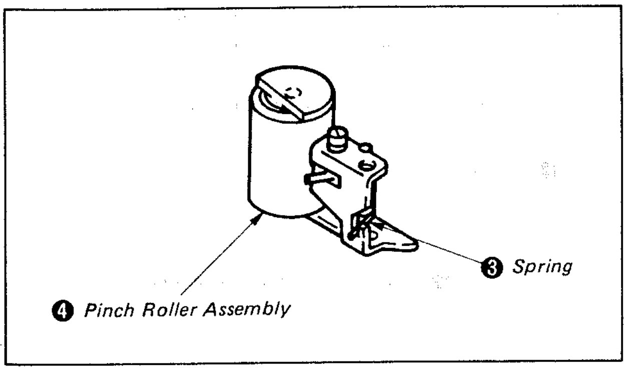

❸ Spring
❹ Pinch Roller Assembly

*Fig. 2-22*

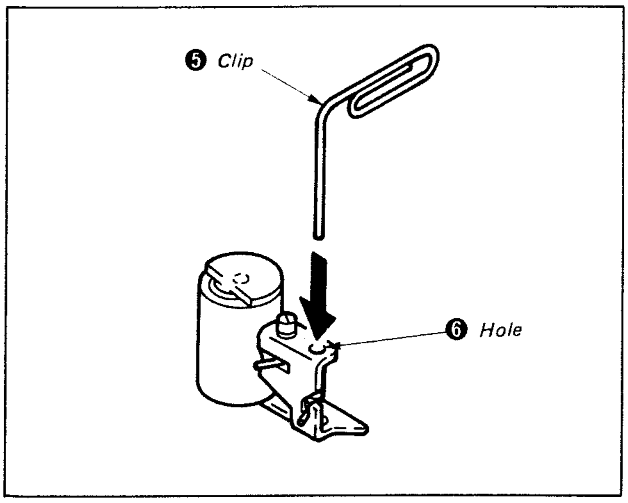

❺ Clip
❻ Hole

*Fig. 2-23*

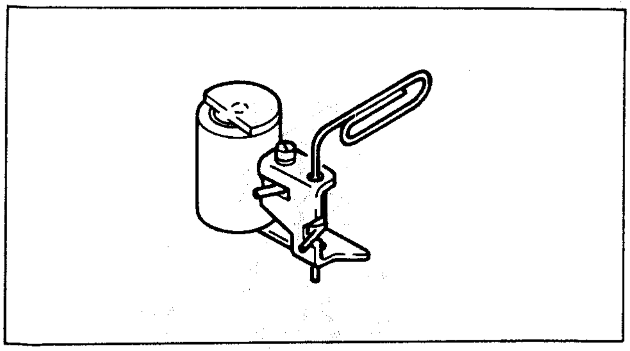


*Fig. 2-24*

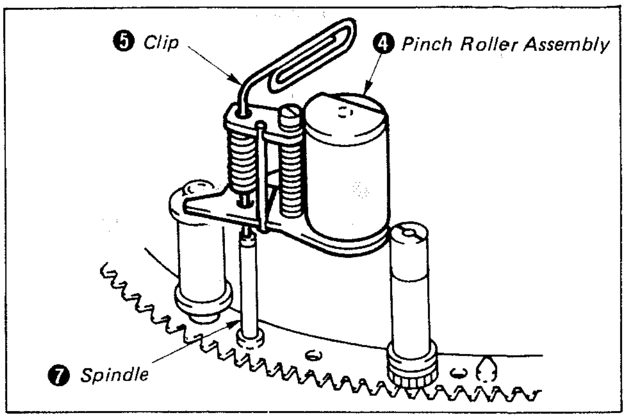

❺ Clip
❹ Pinch Roller Assembly
❼ Spindle

*Fig. 2-25*

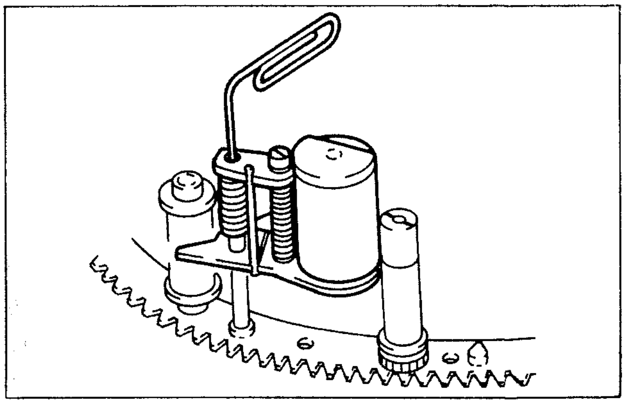


*Fig. 2-26*

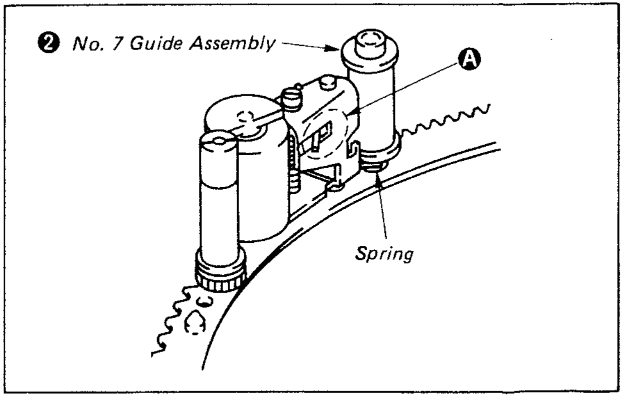

❷ No. 7 Guide Assembly
Ⓐ
Spring

*Fig. 2-27*

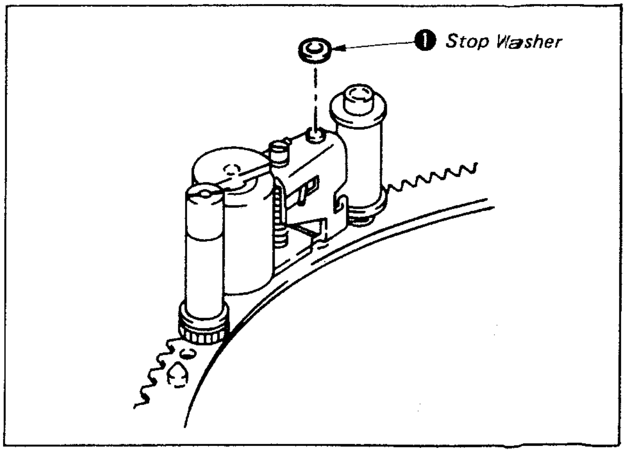

❶ Stop Washer

*Fig. 2-28*

## 2-3-9. Slant Guide Chassis Assembly

### 1. Removal

1) Set up the EJECT mode and raise the cassette compartment asembly.
2) Remove the loading ring assembly as instructed in 2-3-7.
3) Remove the screw ❶ and E ring ❷ .
4) Remove the slant guide chassis assembly ❸ . (See Fig. 2-29.)

### 2. Remounting

1) Operate the mode selector and align the righthand edge of the L slider and that of the lock slider. (See Fig. 2-30.)
2) Set the guide base assembly of the slant guide chassis assembly in an unthreading condition (with the guide base assembly moved to the control panel side) and remount it. (See Fig. 2-31.)
   Check the meshing position of the slant guide drive gear and the L slider assembly gear at this time.
3) Refit the E ring ❷ and tighten the screw ❶ . (See Fig. 2-29.)
4) Set to Condition 1) of 1. Remounting in 2-3-7.
5) Remount the loading ring assembly as instructed in 2-3-7.
6) Lower the cassette compartment assembly.

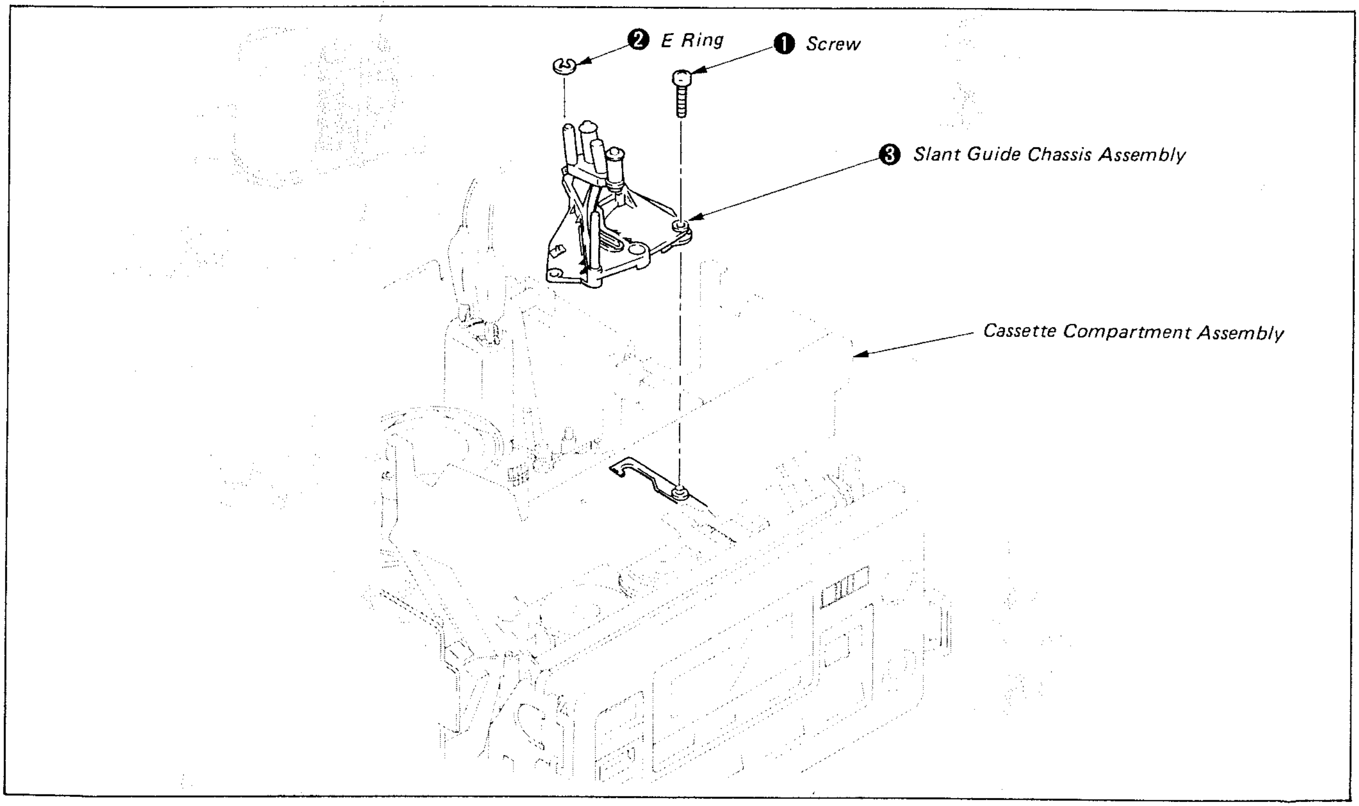

❷ E Ring
❶ Screw
❸ Slant Guide Chassis Assembly
Cassette Compartment Assembly

*Fig. 2-29*

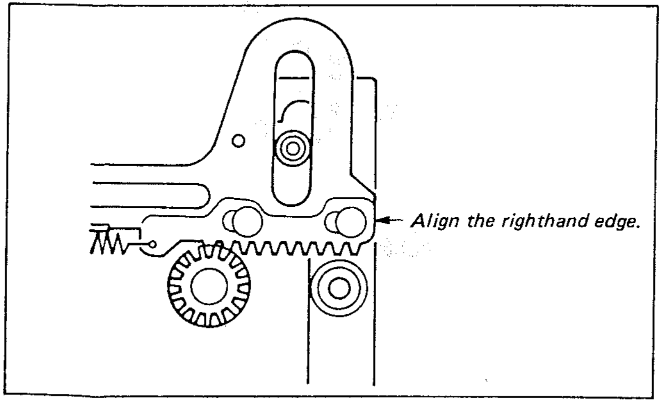

Align the righthand edge.

*Fig. 2-30*

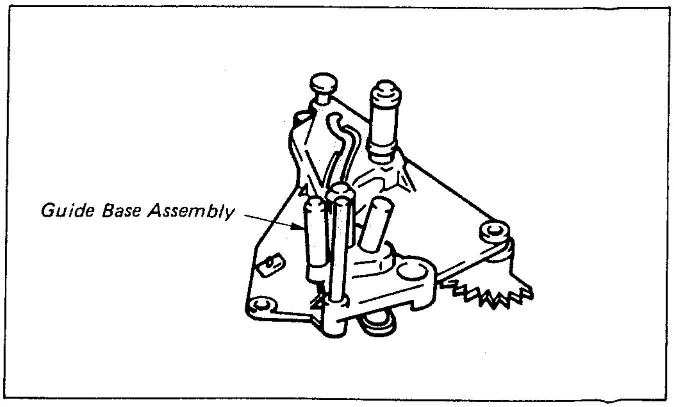

Guide Base Assembly

*Fig. 2-31*

### 2-3-10. No. 2 Guide Assembly

**1. Removal**

1) Remove the tape stopper ❶ .
2) Rotate the rotary upper drum counterclockwise so that the head does not contact.
3) Remove the drum guard screw ❷ .
4) Remove the screw ❸ .
5) Remove the guide nut ❹ of the No. 3 guide, as well as the guide flange ❺ , guide ❻ and compression spring ❼ .
6) Remove the No. 2 guide assembly ❽ . (See Fig. 2-32.)

**2. Remounting**

1) Mesh the toothless part Ⓐ of the toothed wheel under the No. 2 guide assembly (entrance guide (P) assembly) and that Ⓑ of the L slider.
2) Remount the compression spring ❼ , guide ❻ , and guide flange ❺ in this order and tighten the guide nut ❹ temporarily.
3) Tighten the screw ❸ .
4) Tighten the drum guard screw ❷ .
5) Refit the tape stopper ❶ . (See Fig. 2-32.)
6) Adjust the FWD back tention as instructed in 2-3-22.

**Note:** Be sure to adjust the tape path as instructed in 2-4 after remounting.

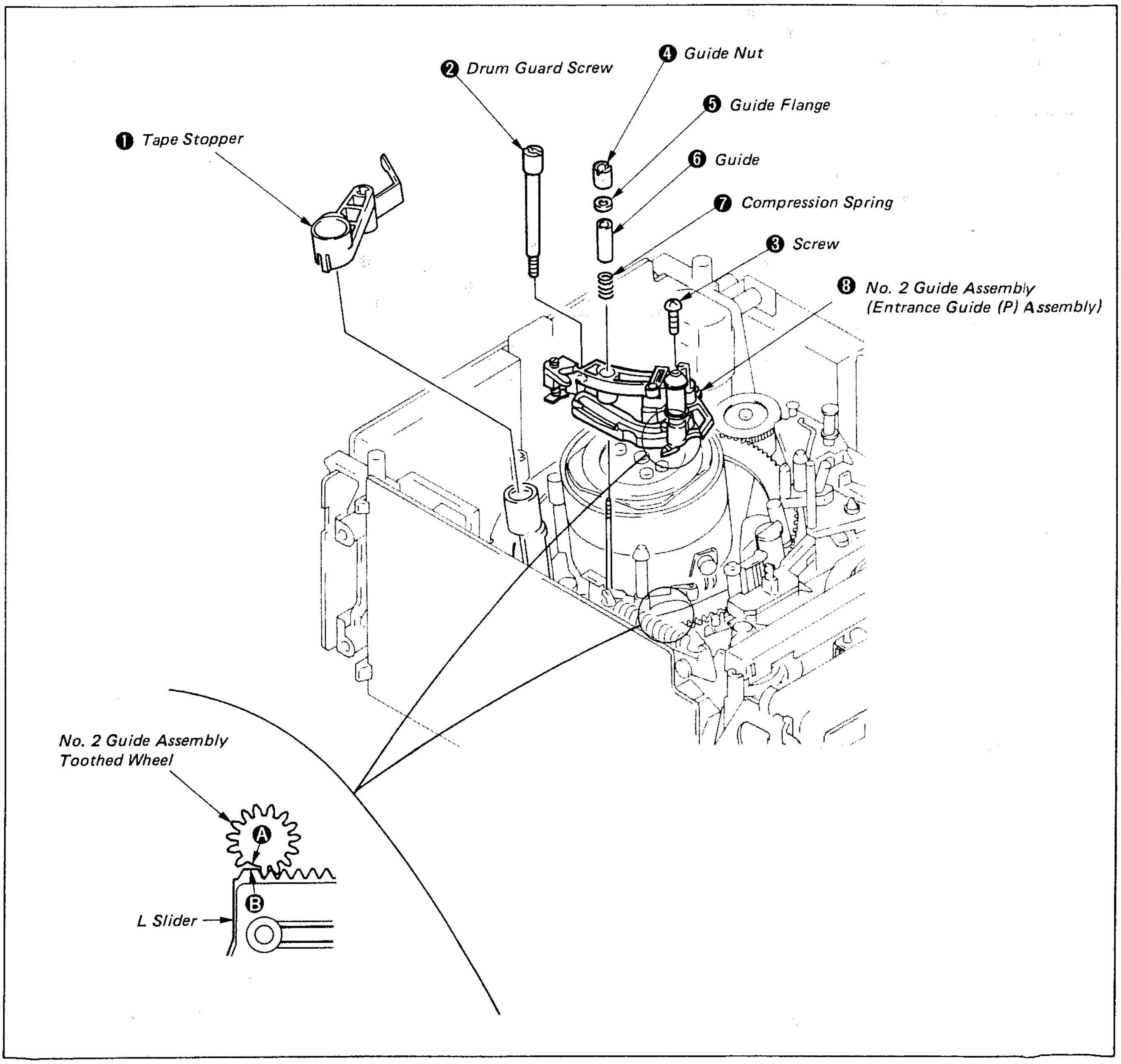

❷ Drum Guard Screw
❹ Guide Nut
❺ Guide Flange
❶ Tape Stopper
❻ Guide
❼ Compression Spring
❸ Screw
❽ No. 2 Guide Assembly
(Entrance Guide (P) Assembly)
No. 2 Guide Assembly
Toothed Wheel
Ⓐ
Ⓑ
L Slider

Fig. 2-32

### 2-3-11. L Slider Assembly

#### 1. Removal

1) Remove the slant guide chassis assembly as instructed in 2-3-9.
2) Remove the No. 2 guide assembly (entrance guide (P) assembly) as instructed in 2-3-10.
3) Set up the DRUM START mode.
4) Remove the slant guide drive gear ❶ .
5) Remove the pin of the tension regulator load arm assembly ❷ from the cam groove of the tension regulator arm assembly. (Refer to 2-3-4 Tension regulator arm assembly.)
6) Remove the two stopper washers ❸ .
7) Remove the L slider assembly ❺ push the RL arm assembly lug ❹ toward the arrow Ⓐ .
8) Remove the stopper washer ❻ and tension regulator load arm assembly ❷ . (See Fig. 2-33.)

#### 2. Remounting

1) Grease the parts. (See Fig. 2-34.)
2) Remount the tension regulator load arm assembly ❷ and stop washer ❻ . (See Fig. 2-34.)
3) Remount the L slider assembly ❺ pushing the RL arm assembly lug ❹ toward the arrow Ⓐ .
4) Refit the two stop washers ❸ .
5) Reinsert the pin of the tension regulator load arm assembly ❷ into the groove of the M slider. (Refer to 2-3-15 M Slider.)
6) Reinsert the pin of the tension regulator load arm assembly ❷ in the cam groove of the tension regulator arm assembly referring to 2) of 2. Remounting in 2-3-4. (Refer to 2-3-4 Tension regulator arm assembly.)
7) Operate the mode selector and align the righthand edges of the L slider and lock slider. (Refer to 1) of 2. Remounting in 2-3-9.)
8) Mesh the notch of the slant guide drive gear with the tooth at the lefthand edge of the L slider assembly by sliding one tooth. (See Fig. 2-35.)
9) Remount the No. 2 guide assembly in accordance with 2-3-10.
10) Remount the slant guide chassis assembly as instructed in 2-3-9.

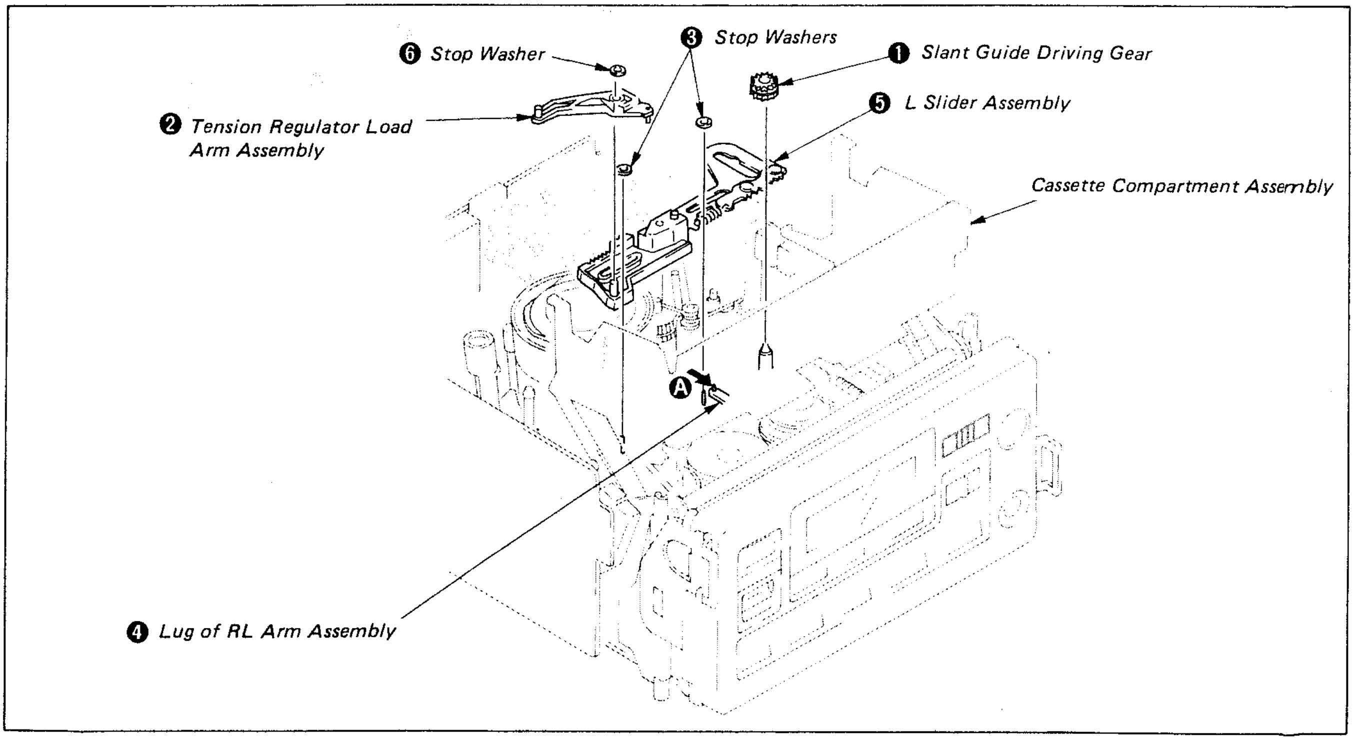

❻ Stop Washer
❸ Stop Washers
❶ Slant Guide Driving Gear
❷ Tension Regulator Load Arm Assembly
❺ L Slider Assembly
Cassette Compartment Assembly
Ⓐ
❹ Lug of RL Arm Assembly

Fig. 2-33

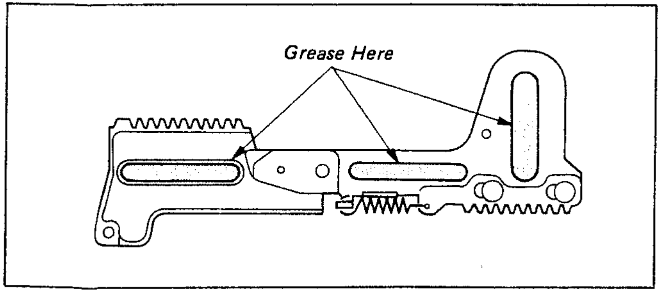

Grease Here

Fig. 2-34

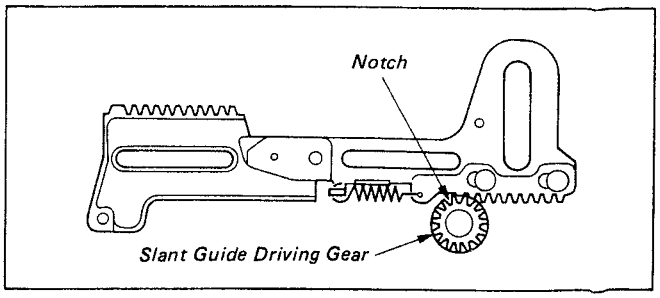

Notch
Slant Guide Driving Gear

Fig. 2-35

## 2-3-12. L-SW Assembly

### 1. Removal

1) Remove the L slider assembly as instructed in 2-3-11.
2) Remove the lock slider retainer ❶ .
3) Remove the screw ❷ and lock slider ❸ .
4) Remove the stop washer ❹ and spring ❺ .
5) Remove the drive changer assembly ❻ .
6) Remove the connector ❼ .
7) Remove two screws ❽ and L-SW assembly ❾ . (See Fig. 2-36.)

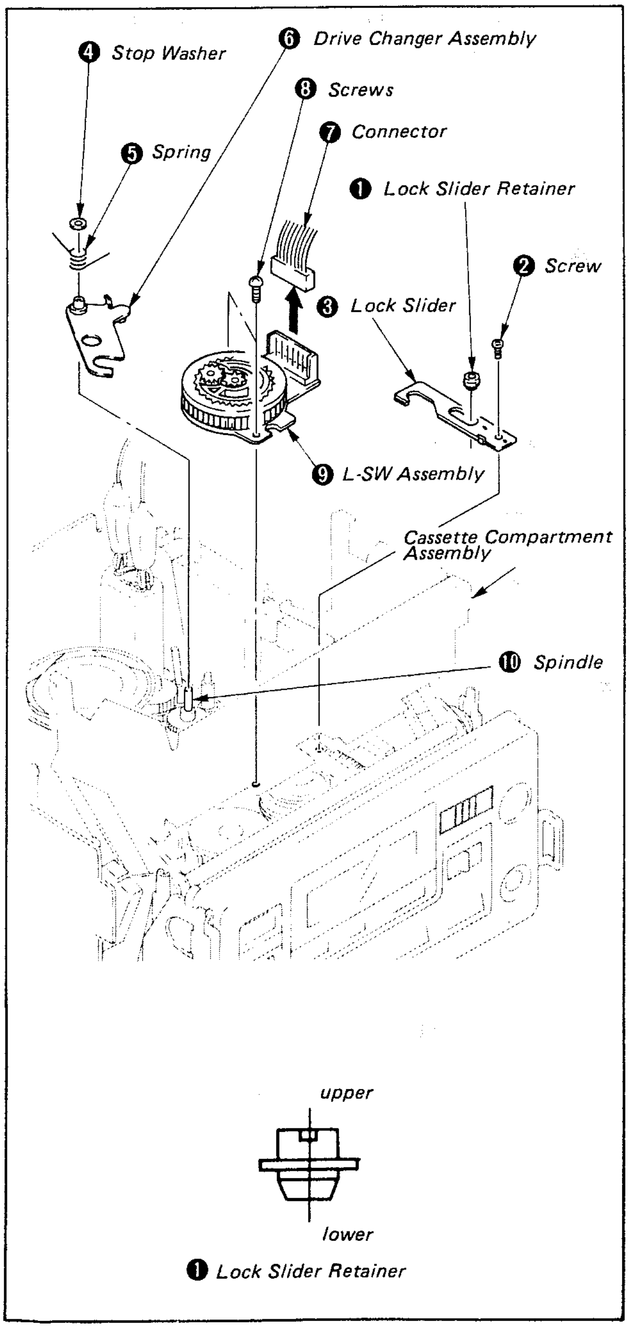

❹ Stop Washer
❻ Drive Changer Assembly
❽ Screws
❼ Connector
❺ Spring
❶ Lock Slider Retainer
❷ Screw
❸ Lock Slider
❾ L-SW Assembly
Cassette Compartment Assembly
❿ Spindle
upper
lower
❶ Lock Slider Retainer

Fig. 2-36

### 2. Remounting

1) Oil half a drop of oil on the spindle (planetary roller spindle) of the L-SW assembly ❾ .
2) Remount the L-SW assembly ❾ and tighten two screws ❽ .
3) Reconnect the connector ❼ .
4) Operate the mode selector and check that the L-SW assembly ❾ rotates.
5) Oil half a drop of oil on the spindle ❿ .
6) Grease the drive changer assembly ❻ . (See Fig. 2-37.)
7) Remount the drive changer assembly ❻ . (See Fig. 2-36.)
8) Rehook the spring ❺ and refit the stop washer ❹ .
9) Operate the mode selector and check that the L-SW assembly ❾ rotates.
10) Remount the lock slider ❸ and tighten the screw ❷ . Confirm that the positioning dowel is firmly in place.
11) Remount the lock slider retainer ❶ . Note correct vertical direction. (See Fig. 2-36.)
12) Operate the mode selector and set in the position shown in Fig. 2-38. The DC roller should be in the groove.
13) Remount the L slider assembly as instructed in 2-3-11.

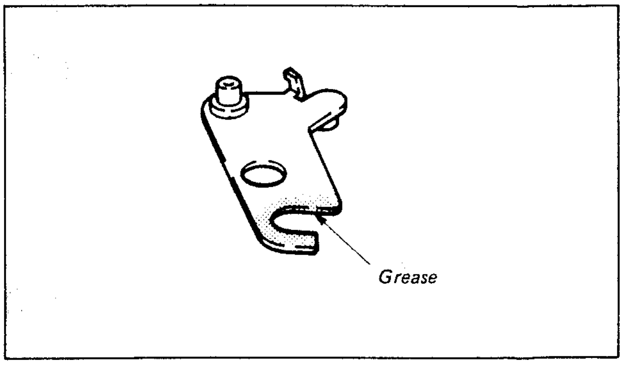


Fig. 2-37

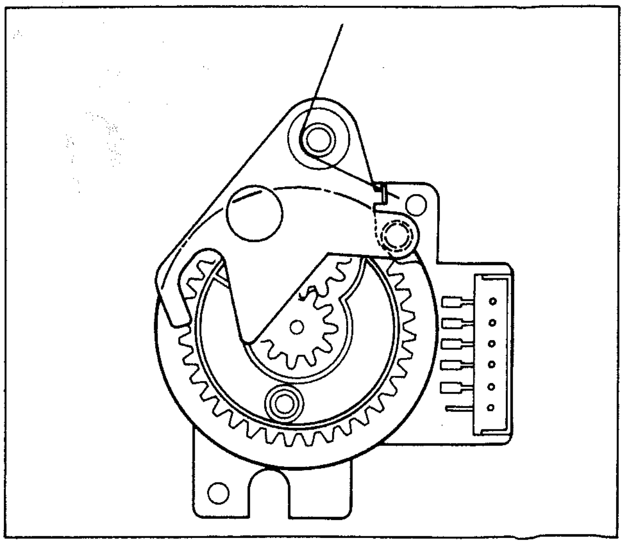


Fig. 2-38

### 2-3-13. Plunger Solenoid

**1. Removal**

1) Open the MC-8 Board and disconnect the connector CN501 (white) 3P as instructed in section 2 (disassembly). Removal in 2-10.
2) Remove the cassette compartment assembly as instructed in 2-1-1.
3) Remove the spring ❶ .
4) Remove two stop washers ❷ .
5) Remove the screw ❸ and lock slider ❹ .
6) Remove two screws ❺ and the plunger solenoid ❻ . (Be careful not to inflict scars on the T reel table by a screwdriver. Do not touch the table.) (See Fig. 2-39.)

**2. Remounting**

1) Reinsert the pin ❼ of the plunger solenoid in the P arm hole ❽ and tighten two screws ❺ . Be careful not to inflict scars on the T reel table by a screwdriver or touch it.)
2) Remount the lock slider ❹ and tighten the screw ❸ .
3) Refit the two stop washers ❷ .
4) Refit the spring ❶ . (See Fig. 2-39.)
5) Remount the cassette compartment assembly in accordance with 2-1-1.
6) Reconnect the connector CN501 (white) 3P on the MC-8 Board.

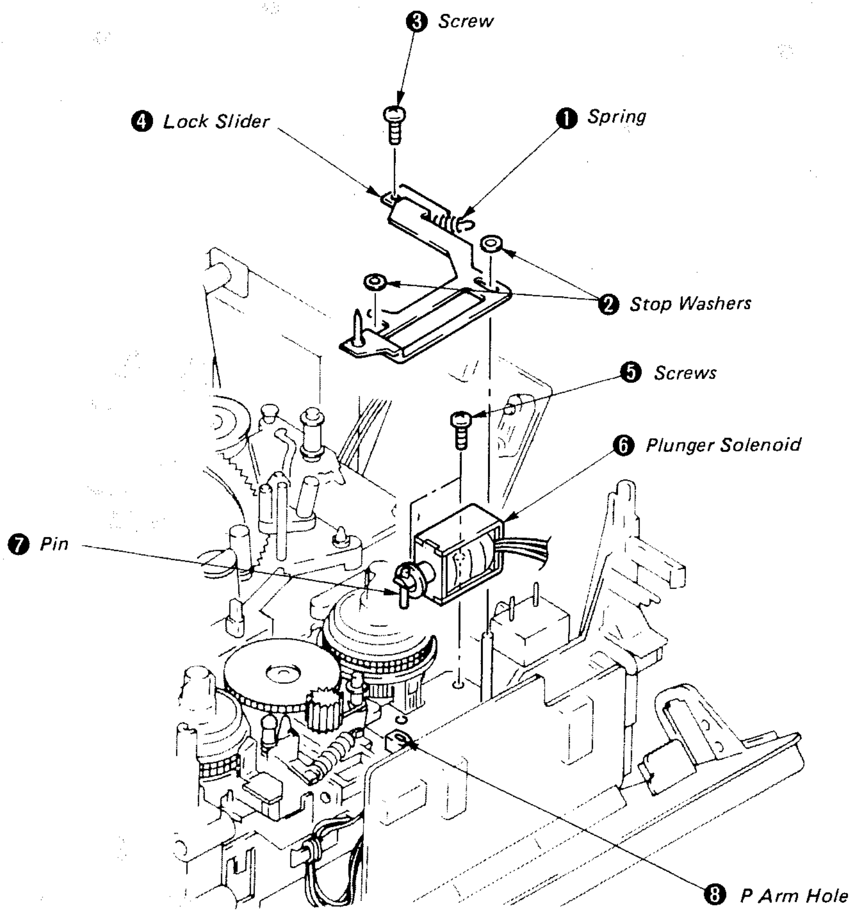


*Fig. 2-39*

### 2-3-14. M-SW Assembly

**1. Removal**

1) Open the MC-8 Board as instructed in section 2, remove the connector CN515 (black) 2P from the RS-5 Board, and extend the wire stretching to the outside.
2) Remove the T reel table assembly as instructed in 2-3-2.
3) Remove the stop washer ① and drive gear (B) assembly ②.
4) Remove the complete LD-1 board ③. (See Fig. 2-40.)
5) Remove the lock slider as instructed in 3), 4), and 5) of 1. Removal in 2-3-13.
6) Remove the spring ④ and B release arm assembly ⑤.
7) Check that the EJECT mode is set up.
8) Remove the stop wahser ⑥ and mode output gear ⑦.
9) Remove the screw ⑧ and RECOG SW assembly (S902) ⑨.
10) Disconnect the connector ⑩.
11) Remove three screws ⑪, control motor cover ⑫ and M-SW assembly ⑬.
12) Remove solder Ⓐ and the control motor (M903) ⑭. (See Fig. 2-41.)

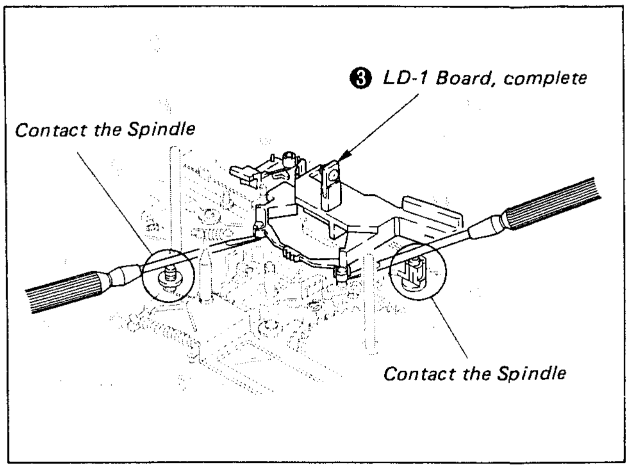

③ LD-1 Board, complete
Contact the Spindle
Contact the Spindle

Fig. 2-40

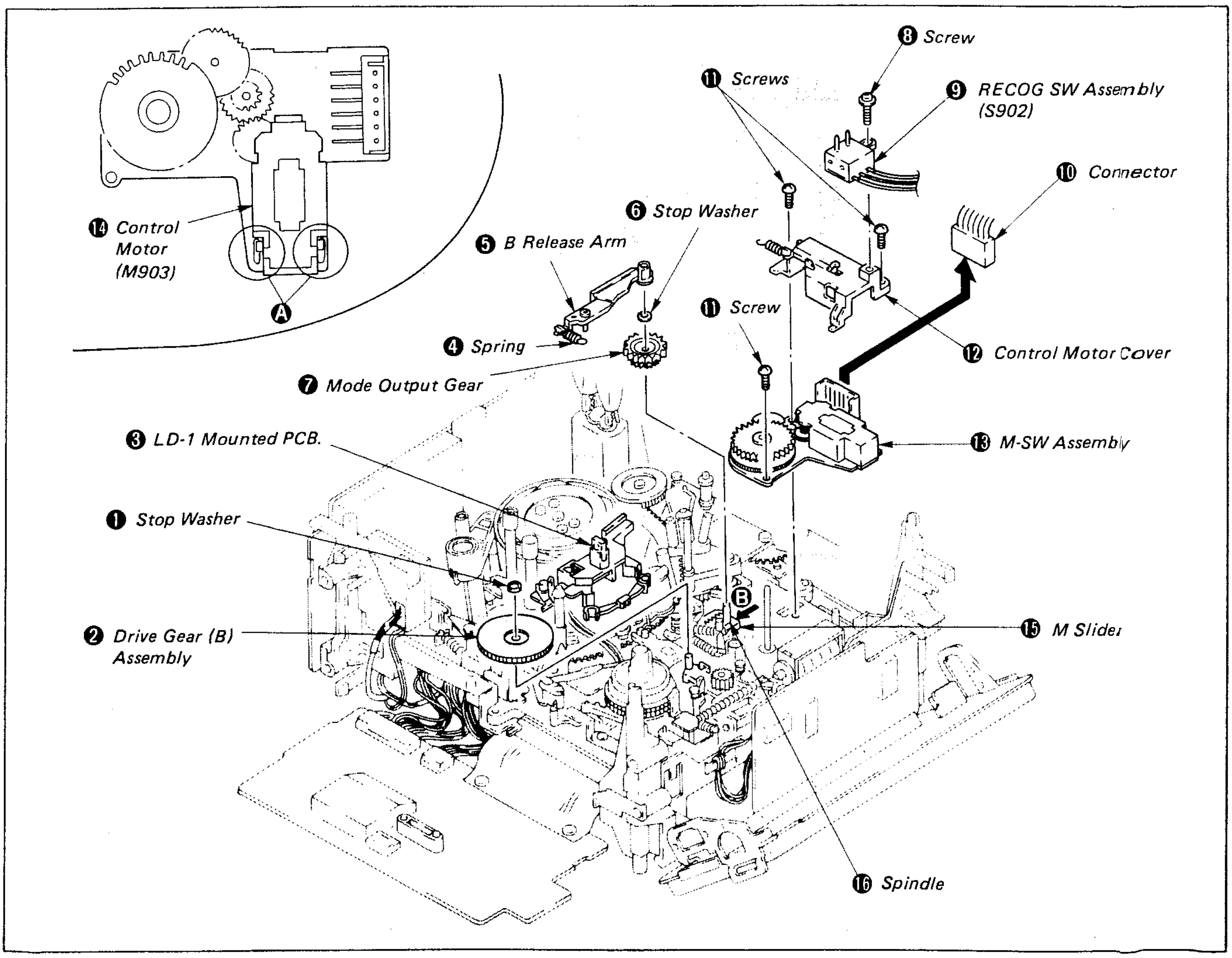

⑧ Screw
⑪ Screws
⑨ RECOG SW Assembly (S902)
⑩ Connector
⑥ Stop Washer
⑭ Control Motor (M903)
⑤ B Release Arm
Ⓐ
⑪ Screw
④ Spring
⑫ Control Motor Cover
⑦ Mode Output Gear
③ LD-1 Mounted PCB.
⑬ M-SW Assembly
① Stop Washer
Ⓑ
② Drive Gear (B) Assembly
⑮ M Slider
⑯ Spindle

Fig. 2-41

**2. Remounting**

1) Resolder the control motor (M903) ⑭ .
2) Remount the M-SW assembly ⑬ and control motor cover ⑫ and tighten three screws ⑪ .
3) Reconnect the connector ⑩ .
4) Remount RECOG SW assembly (S902) ⑨ and tighten the screw ⑧ .
5) Check that the EJECT mode is set up.
6) Check that the M slider ⑮ is moved toward the arrow Ⓑ fully.
7) Oil half a drop of oil on the spindle ⑯ . (See Fig. 2-41.)
8) Remount the mode output gear ⑦ so that the alignment holes are linear. (See Fig. 2-42.)
   Caution required here since there are two holes in the M-SW assembly gear.
9) Refit the stop washer ⑥.
10) Set to the LOADING/UNLOADING mode.
11) Remount the B release arm assembly ⑤ and rehook the spring ④.
12) Remount the lock slider as instructed in 2), 3) and 4) of 2. Remounting in 2-3-13.
13) Remount the complete LD-1 board ③ .
14) Remount the drive gear (B) assembly ② and refit the stop washer ① . (See Fig. 2-41.)
15) Remount the T reel table assembly as instructed in 2-3-2.
16) Connect the connector CN515 (black) 2P to the RS-5 Board.

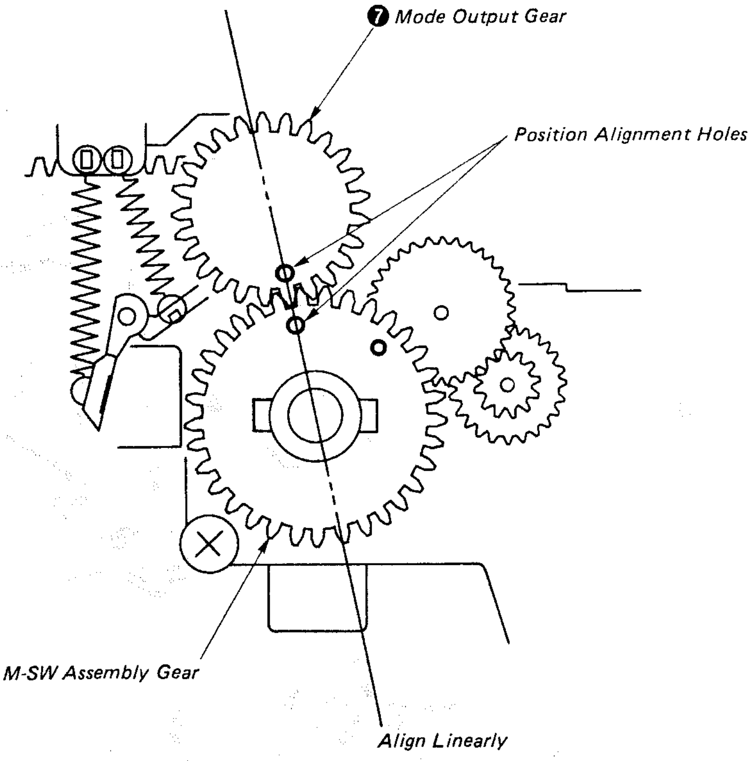


*Fig. 2-42*

### 2-3-15. M Slider

#### 1. Removal

1) Open the MC-8 Board as instructed in section 2 and remove the timing belt ❶ .
2) Remove the pinch press arm assembly as instructed in 2-3-3.
3) Remove the tension regulator arm assembly as instructed in 2-3-4.
4) Remove the tension regulator band assembly as instructed in 2-3-5.
5) Remove the loading ring assembly as instructed in 2-3-7.
6) Perform Steps 1) to 6) of 2-3-14 (1. Removal).
7) Remove the tension regulator load arm assembly as instructed in 8) of 1. Removal in 2-3-11.
8) Remove the spring ❷ .
9) Remove two stop washers ❸ , S main brake assembly ❹ and T main brake assembly ❺ .
10) Set up the LOADING TOP and LOADING/UNLOADING modes.
11) Remove two screws ❻ and the driving arm complete assembly ❼ .
12) Perform Step 8) of 1. Removal in 2-3-14.
13) Remove two springs ❽ .
14) Remove the REW brake assembly ❾ .
15) Remove the stop washer ❿ and B release slider ⓫ .
16) Remove the RVS arm ⓬ .
17) Remove the stop washer ⓭ , spring ⓮ , and RL arm ⓯ .
18) Move the M slider ⓰ toward the right (leave approximately 5mm on the left).
19) Remove the E ring ⓱ and pinch press lever assembly ⓲ .
20) Remove the spring ⓳ and hard brake (S) ⓴ .
21) Remove the stop washer ㉑ , push the mode arm ㉒ toward the arrow Ⓐ , then remove the M slider ⓰ by lifting the lefthand side of the M slider ⓰ . (See Fig. 2-43.)

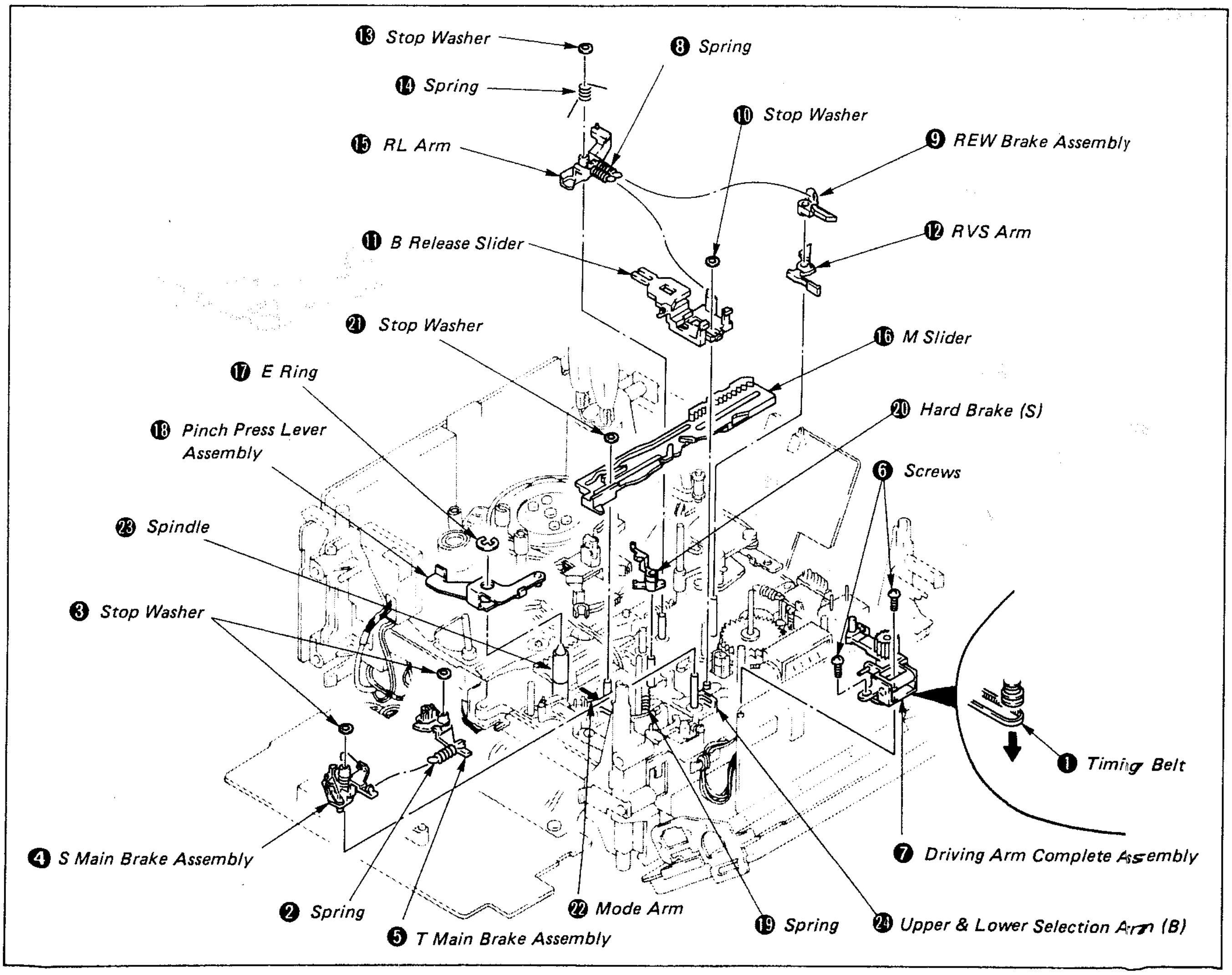

⓭ Stop Washer
❽ Spring
⓮ Spring
❿ Stop Washer
⓯ RL Arm
❾ REW Brake Assembly
⓫ B Release Slider
⓬ RVS Arm
㉑ Stop Washer
⓰ M Slider
⓱ E Ring
⓴ Hard Brake (S)
⓲ Pinch Press Lever Assembly
❻ Screws
㉓ Spindle
❸ Stop Washer
❶ Timing Belt
❹ S Main Brake Assembly
❼ Driving Arm Complete Assembly
❷ Spring
㉒ Mode Arm
❺ T Main Brake Assembly
⓳ Spring
㉓ Upper & Lower Selection Arm (B)

Fig. 2-43

**2. Remounting**

1) Grease the slider. (See Fig. 2-44.)
2) Push the mode arm ㉒ in the arrow Ⓐ direction, remount the M slider ⑯ referring to Fig. 2-45 and paying attention to the vertical position relationship with other portions of the slider, and refit the stop washer ㉑ . (See Fig. 2-43.)
3) Remount the hard brake (S) ⑳ and rehook the spring ⑲ .
4) Grease as shown in Fig. 2-46.
5) Oil half a drop of oil on the parts below the spindle ㉓ groove, mount the pinch press lever assembly ⑱ , and refit the E ring ⑰ .
6) Remount the RL arm ⑮ , rehook the spring ⑭ , and refit the stop washer ⑬ .
7) Remount the RVS arm ⑫ .
8) Remount the B release slider ⑪ and refit the stop washer ⑩ .
9) Remount the REW brake assembly ⑨ .
10) Rehook two springs ⑧ .

**Note:** Rehook two springs as noted below so as not to misplace them.
The spring for the B release slider
outside diam: 2mm, wire diam: 0.18mm
The spring for the REW ass'y
outside diam: 1.6mm, wire diam: 0.12mm

11) Move the M slider ⑯ fully to the left.
12) Set up the $\boxed{\text{EJECT}}$ mode.
13) Perform Steps 7), 8) and 9) of 2. Remounting in 2-3-14.
14) Set up the $\boxed{\text{LOADING/UNLOADING}}$ mode.
15) Insert the horizontal spindle of the driving arm complete assembly ⑦ in the groove of the upper & lower selection arm (B) ㉔ , insert the lug of the RVS arm ⑫ in the dented part of the driving arm complete assembly ⑦ , and tighten two screws ⑥ .
16) Remount the T main brake assembly ⑤ and S main brake assembly ④ , refit two each stop washers ③ , and refit the spring ② . (See Fig. 2-43.)
17) Remount the tension regulator load arm assembly as instructed in 2) of 2. Remounting in 2-3-11.
18) Perform Steps 11) to 16) of 2. Remounting in 2-3-14.
19) Remount the loading ring assembly as instructed in 2-3-7.
20) Remount the tension regulator band assembly as instructed in 2-3-5.
21) Remount the tension regulator arm assembly as instructed in 2-3-4.
22) Remount the pinch press arm assembly as instructed in 2-3-3.
23) Open the MC-4 Board referring to section 2 and remount the timing belt ① .

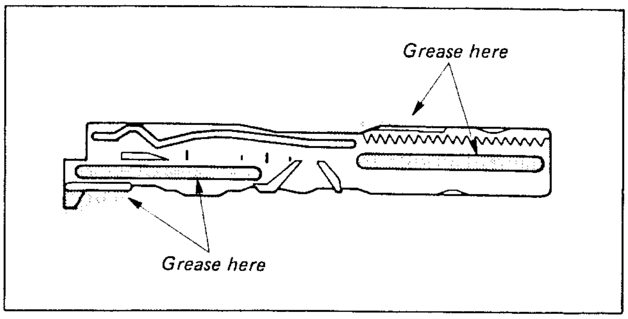


*Fig. 2-44*

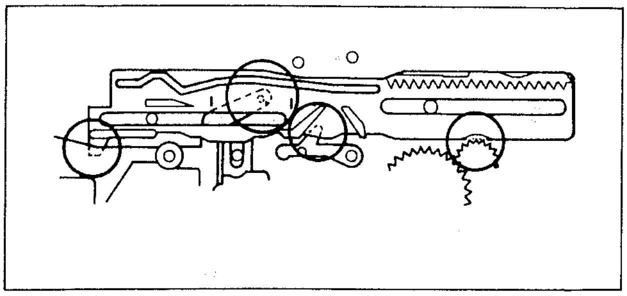


*Fig. 2-45*

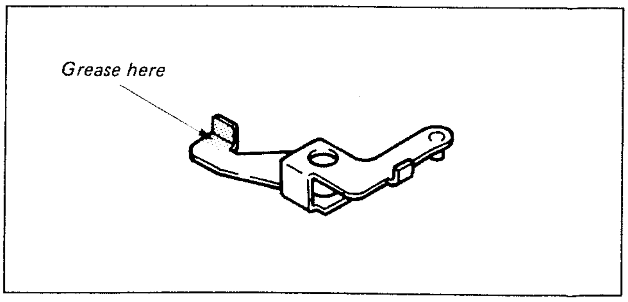


*Fig. 2-46*

## 2-3-16. Capstan Motor

### 1. Removal

1) Remove the tape stopper as instructed in 1) of 1. Removal in 2-3-10.
2) Remove the loading ring assembly as instructed in 2-3-7.
3) Open the MC-8 Board as instructed in 2. Removal in 2-10 and turn the set upside down.
4) Remove the screw ❶ and the wire holder ❷ .
5) Remove the timing belt ❸ .

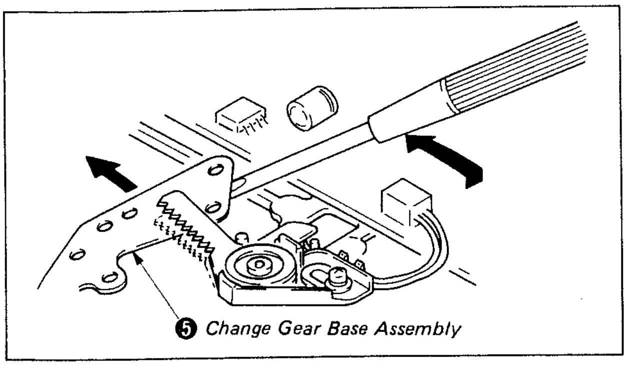

❺ Change Gear Base Assembly

*Fig. 2-47*

6) Remove the screw ❹ and the change gear base assembly ❺ using a screwdriver. (See Fig. 2-47 and 48.)
7) Disconnect the connectors ❻ and ❼ .
8) Remove two screws ❽ and capstan motor (M902) ❾ as shown by the arrow Ⓐ . (See Fig. 2-48.)

### 2. Remounting

1) Remount the capstan motor (M902) ❾ and tighten two screws ❽ .
2) Reconnect the connectors ❻ and ❼ .
3) Remount the change gear base assembly ❺ and tighten the screw ❹ .
4) Re-place the timing belt ❸ .
5) Remount the wire holder ❷ and tighten the screw ❶ . (See Fig. 2-48.)
6) Re-place the set in its forward position.
7) Remount the loading ring assembly as instructed in 2-3-7.
8) Remount the tape stopper as instructed in 5) of 2.

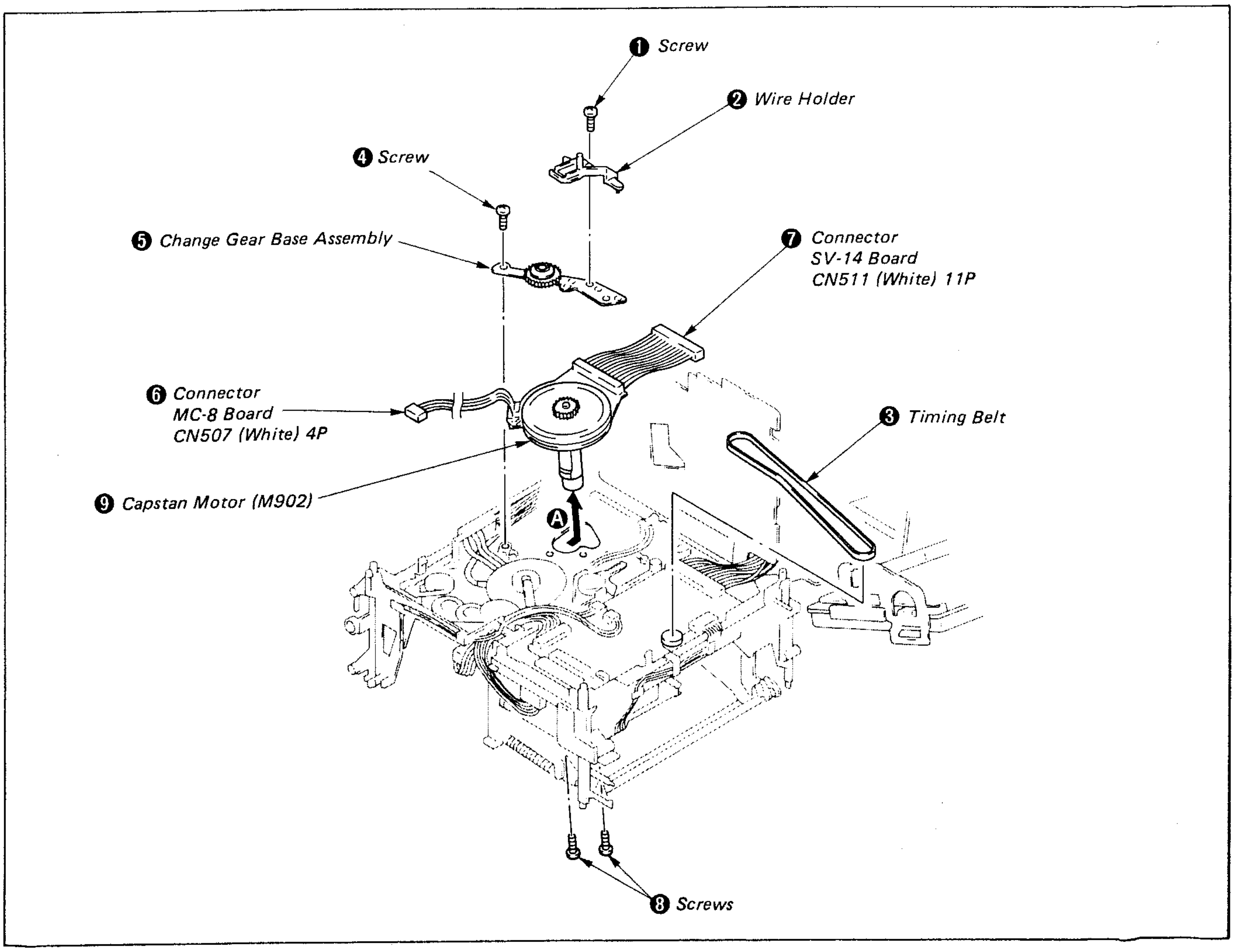

❶ Screw
❷ Wire Holder
❹ Screw
❺ Change Gear Base Assembly
❼ Connector
SV-14 Board
CN511 (White) 11P
❻ Connector
MC-8 Board
CN507 (White) 4P
❸ Timing Belt
❾ Capstan Motor (M902)
Ⓐ
❽ Screws

*Fig. 2-48*

### 2-3-18. Rotary Upper Drum Replacement

**1. Removal**

- The rotary upper drum is marked with a colour dot as shown in Fig. 2-49.
- Remove the rotary upper drum after recording in advance if recording is possible.

The color combination of rotary upper drum for replacement

| New Part | | Former Part |
|---|---|---|
| Part No. | Colour Dot | Colour Dot |
| A-7049-005-A | Blue or Red | Blue or Red |
| A-7049-012-A | Black or Green | Black or Green |

1) Remove two hexagon socket screws (2 x 2.7) ❶ and dismount the dynamic damper ❷ . (See Fig. 2-49.)
2) Suction solder at all of the soldered eight positions Ⓐ . Check that the printed wiring board and pins jutting out from below freely moove using tweezers, or other tool. (See Fig. 2-49.)
3) Remove the two hexagon socket screw (2 x 5) ❸ . (See Fig. 2-49.)
4) Remount the dismounting Jig Ⓑ by the accessory screws ❹ utilizing the screw holes in which the dynamic damper was mounted.
   Drive the hexagon socket screw ❺ into the jig and pulled up the rotary upper drum ❻ . (See Fig. 2-50.)

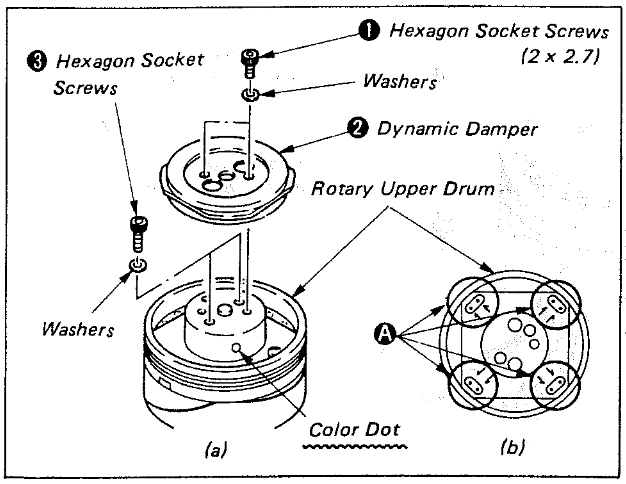

❶ Hexagon Socket Screws (2 x 2.7)
❸ Hexagon Socket Screws
Washers
❷ Dynamic Damper
Rotary Upper Drum
Washers
Ⓐ
Color Dot
(a)
(b)

Fig. 2-49

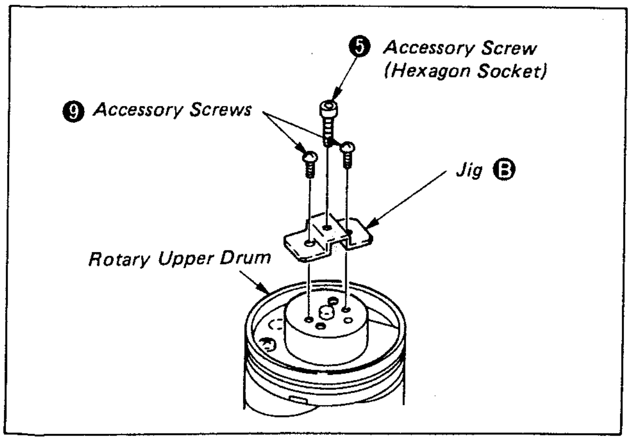

❺ Accessory Screw (Hexagon Socket)
❾ Accessory Screws
Jig Ⓑ
Rotary Upper Drum

Fig. 2-50

**2. Remounting**

1) Carefully clean the flange surfaces and planes of the rotary upper drum and visually check that no blemishes or flaws are left.
2) Insert Jig Ⓒ in the positioning hole Ⓓ so that the holes of the rotary upper drum ❻ and flange coincide. Lightly insert the rotary upper drum in the drum shaft while aligning their positions. (See Fig. 2-51.)(Check that pins are projecting above the holes on the printed circuit board of the rotary upper drum. When the pins are caught, correct using tweezers, etc.)
3) Remove Jig Ⓒ , lightly push the rotary upper drum by hands. If the rotary upper drum does not go in to the bottom, alternately tighten the two hexagon socket screws (2 x 5) ❸ by hand and temporarily fix them. (See Fig. 2-49 and 2-52.)
4) Reinsert the Jig Ⓒ in the positioning hole and check that the jig can be inserted smoothly. (When the jig cannot be inserted, loosen the two hexagon socket screws (2 x 5) ❸ and slide it inserting a clock screwdriver in the hole.)
5) Tighten the two hexagon socket screws (2 x 5) ❸ .

**Note:** Do not tighten too strongly.

6) Solder the eight positions Ⓐ . (See Fig. 2-49.)

**Note:** Be careful not to flow solder below the printed wiring board.

7) Tighten the two hexagon socket screws (2 x 2.7) ❶ reversing the screw removal procedure and remount the dynamic damper ❷ . (See Fig. 2-49.)

**Note:** Do not tighten too strongly.
When remounting, do not mix the hexagon socket screws (2 x 2.7) ❶ and hexagon socket screws (2 x 5) ❸ .

**Note:** Be sure to adjust the tape path as instructed in 2-4 after remounting.

**Note:** Replay the recorded tape after adjusting the tape path and before exchanging the rotary upper drum and check that the tape replays properly.

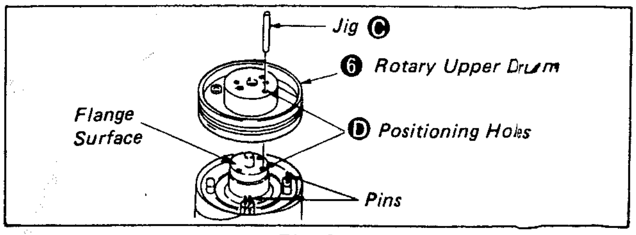

Jig Ⓒ
❻ Rotary Upper Drum
Flange Surface
Ⓓ Positioning Holes
Pins

Fig. 2-51

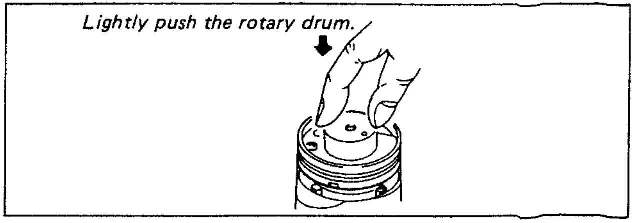

Lightly push the rotary drum.

Fig. 2-52

## 2-3-19. Drum Assembly Replacement

### 1. Removal

1) Open the MC-8 Board as instructed in 2. Removal.
2) Remove the screw ❶ and head lead shield plate ❷ .
3) Remove the screw ❸ and shaft ground terminal ❹ . (See Fig. 2-53.)
4) Disconnect six connectors ❺ .
5) Remove two screws ❻ .
6) Remove the drum assembly ❼ . (See Fig. 2-54.)

### 2. Remounting

1) Remount the drum assembly ❼ and tighten two screws ❻ .
2) Connect six connectors ❺ . (See Fig. 2-54.)
3) Remount the shaft ground terminal ❹ and tighten the screw ❸ .
4) Remount the head lead shield plate ❷ and tighten the screw ❶ . (See Fig. 2-53.)

**Note:** Be sure to adjust the tape path as instructed in 2-4 after remounting.

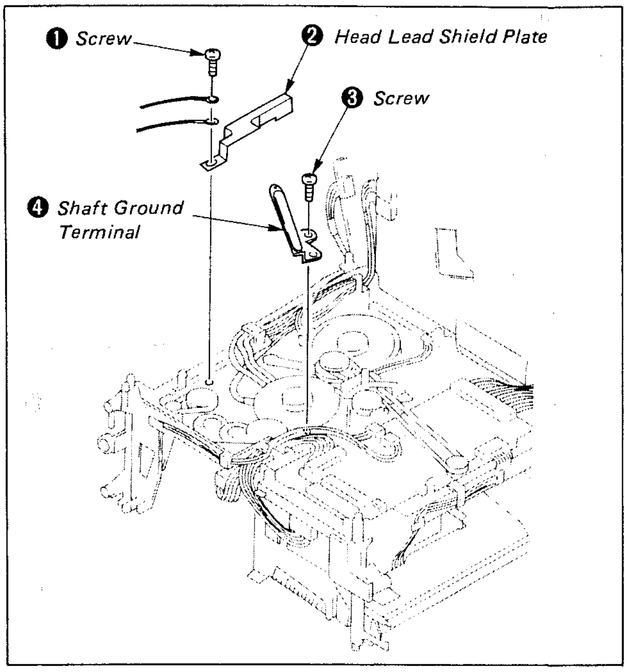

❶ Screw
❷ Head Lead Shield Plate
❸ Screw
❹ Shaft Ground Terminal

Fig. 2-53

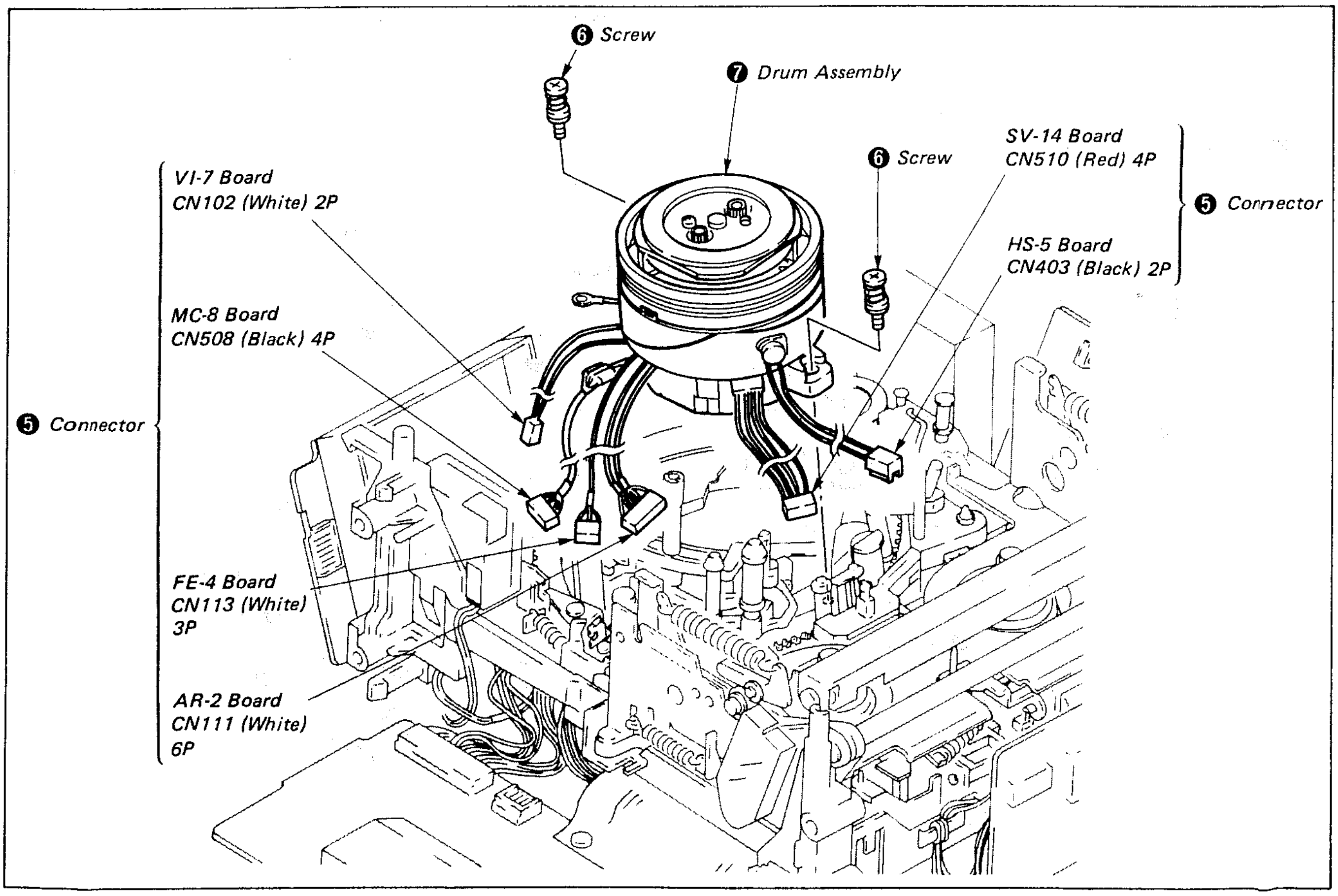

❻ Screw
❼ Drum Assembly
❻ Screw
SV-14 Board CN510 (Red) 4P
HS-5 Board CN403 (Black) 2P
❺ Connector
VI-7 Board CN102 (White) 2P
MC-8 Board CN508 (Black) 4P
❺ Connector
FE-4 Board CN113 (White) 3P
AR-2 Board CN111 (White) 6P

Fig. 2-54

## 2-3-20. Adjustment After Replacing No. 3 and 4 Guides

Run the tape on the upper flanges for both No. 3 and 4 guides after replacing them. (See Fig. 2-90.)

### 2-3-21. No. 5 Guide Assembly

**1. Removal**

1) Remove the tape stopper as instructed in 1) of 1. Removal in 2-3-10.
2) Remove three screws ❶ and No. 5 guide assembly.
3) Remove the guide nut ❷ , the spring ❸ and the shaft 4 . (See Fig. 2-55.)

**2. Remounting**

1) Reinsert the spring ❸ in the shaft ❹ , reengage the dent and bump in the lower parts, and tighten the guide nut ❷ .
2) Remount the No. 5 guide assembly and tighten three screws ❶ . (See Fig. 2-55.)
3) Remount the tape stopper as instructed in 5) of 2. Remounting in 2-3-10.

**Note:** Be sure to adjust the tape path as instructed in 2-4 after remounting.

### 2-3-22. FWD Back Tension Adjustment

**Note:** Perform tape forward running for at least three minutes before performing adjustment.

1) Set up the LOADING END and FWD modes.
2) Loosen the screw ❷ of the band adjustment plate ❶ , adjust the slit ❸ and pin ❹ of the tension regulator arm assembly to be in the position shown by the arrow Ⓐ in the Fig. 2-56, then tighten the screw ❷ .
3) Place the reel (Ref. No. J-7) ❻ to measure tensions on the S reel table ❺ and run a tape along No. 1, 2 and 3 guides and the drum.

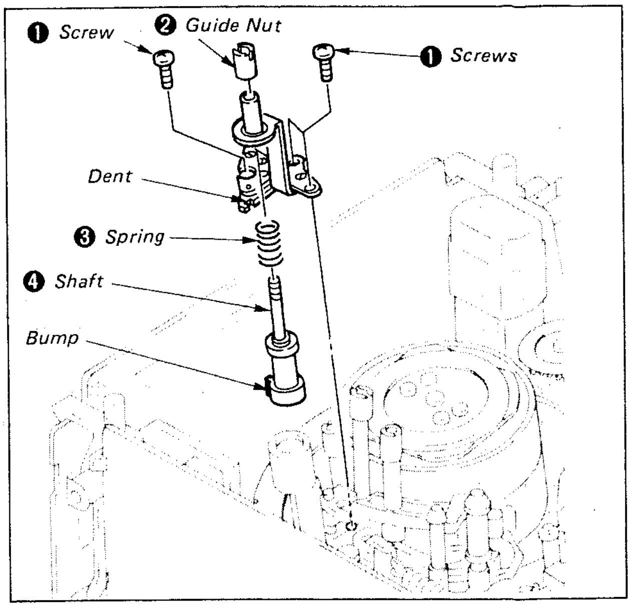

❶ Screw
❷ Guide Nut
❶ Screws
Dent
❸ Spring
❹ Shaft
Bump

*Fig. 2-55*

4) Pull the dial tension gauge (Ref. No. J-6) ❼ in the arrow Ⓑ direction and re-place the spring ❾ on the tension regulator spring hook assembly ❽ as mentioned below so that the value becomes 13.0 ±1g. (See Fig. 2-56.)

Larger than standard . . . . . . . . . . .Arrow Ⓒ direction
Smaller than standard. . . . . . . . . . . Arrow Ⓓ direction

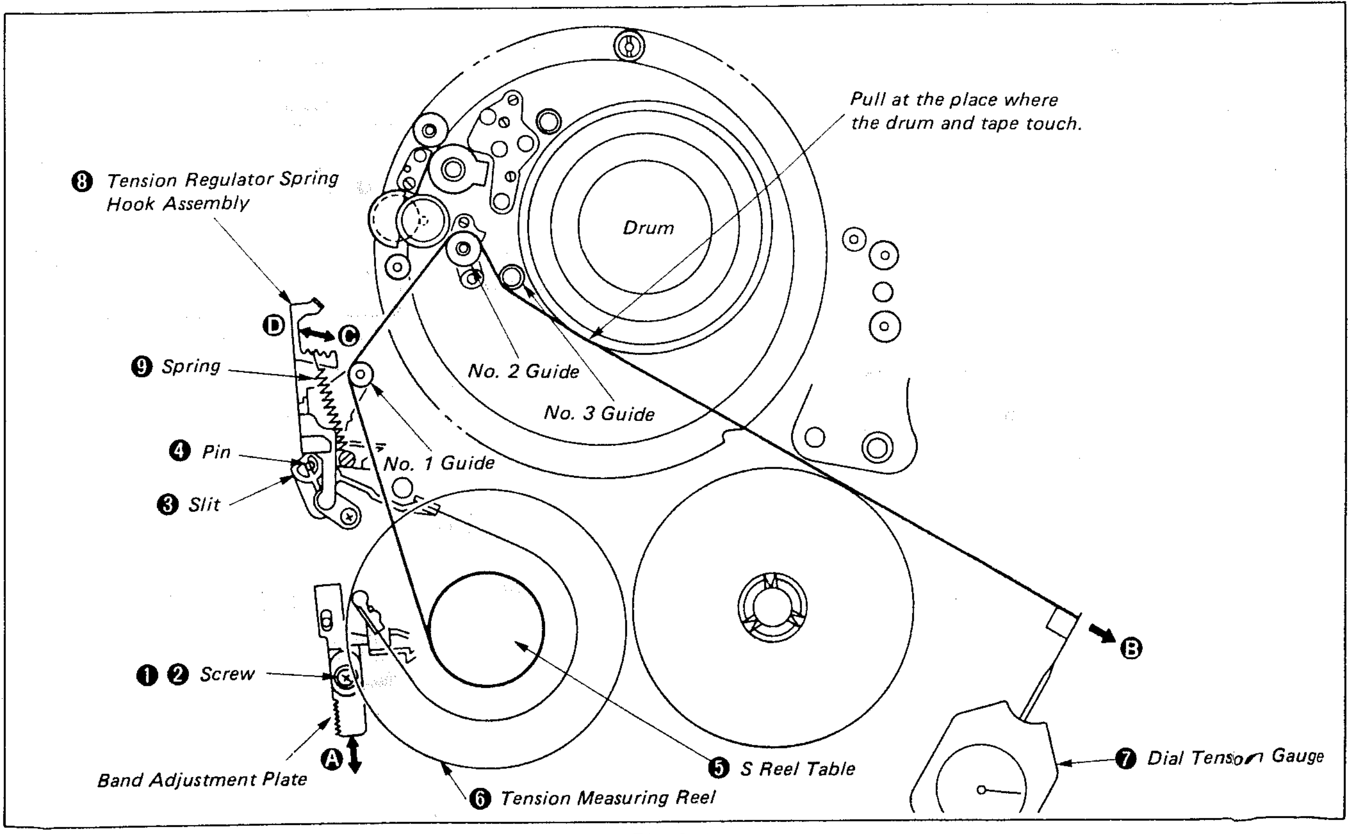

Pull at the place where the drum and tape touch.
❽ Tension Regulator Spring Hook Assembly
Drum
Ⓓ
Ⓒ
❾ Spring
No. 2 Guide
No. 3 Guide
❹ Pin
No. 1 Guide
❸ Slit
Ⓑ
❶ ❷ Screw
Band Adjustment Plate
Ⓐ
❺ S Reel Table
❻ Tension Measuring Reel
❼ Dial Tension Gauge

*Fig. 2-56*

### 2-3-23. Checking and Adjustment of Timing Belt Tension

1) Remove the timing belt. (Refer to 1) of 1. Removal in 2-3-15.)
2) Cover the LED photodetector section (HS-5 Board) for tape end detection with a vinyl tape, and load.
3) Short TP603 and TP604 on the SK-8 Board. (See Fig. 2-57.)
4) Disengage the pinch press arm side (round hook side) of the tension spring hooked on the pinch press arm assembly. (See Fig. 2-58.)
5) Hold the safety pin of the RECOG switch (rec proof side) and tape it. press the REC button to set up the REC mode. (See Fig. 2-59.)
6) Measure the voltage (Vo) between CAP $I_1$ and CAP $I_2$ on the SV-14 Board using an analog tester. (No-load state) (See Fig. 2-60.)
7) Remount the timing belt. (Refer to 4) of 2. Remounting in 2-3-16.
8) Remove the driving gear (B) assembly as instructed in 3) of 1. Removal in 2-3-14.
9) Measure the voltage (Vx) between CAP $I_1$ and CAP $I_2$ as in 6) after setting up the REC mode as mentioned in 5). (When adjusting the belt tension.)
10) Check that the voltage (Vx) during tension adjustment is 22 to 44mV higher than the voltage (Vo) in a no-load state. Adjust as follows if the voltage is not as required.

**Adjustment Method:**

i) Loosen the screw ❶ , slide the idler assembly as shown by the arrow Ⓐ , and fix it by tightening the screw ❶ . (See Fig. 2-61.)
ii) Recheck after performing Step 9).
iii) Repeat i) and ii) until the standard is satisfied.

11) Remove the short between TP603 and TP604 on the SK-8 Board.
12) Remount the driving gear (B) assembly and the tension spring of the pinch press arm assembly.

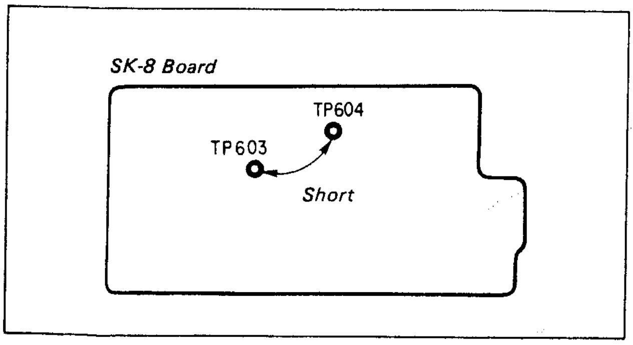


Fig. 2-57

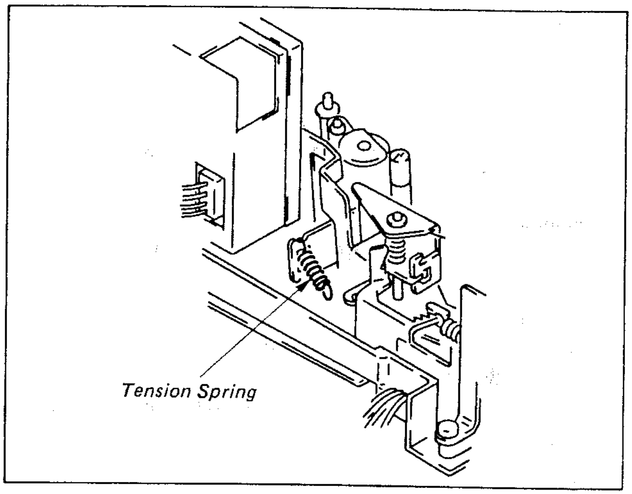


Fig. 2-58

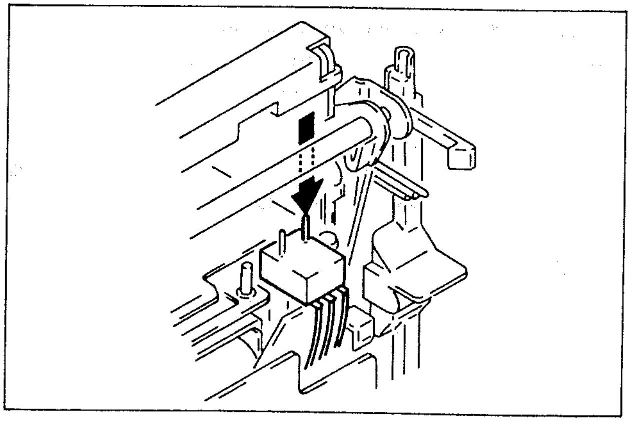


Fig. 2-59

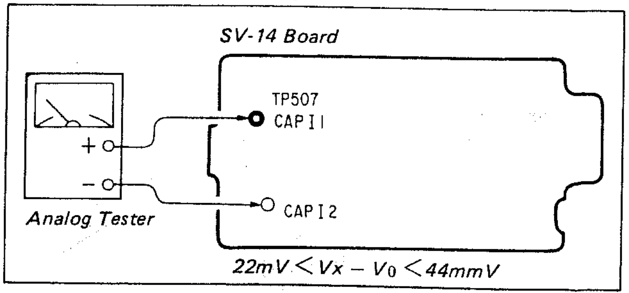


Fig. 2-60

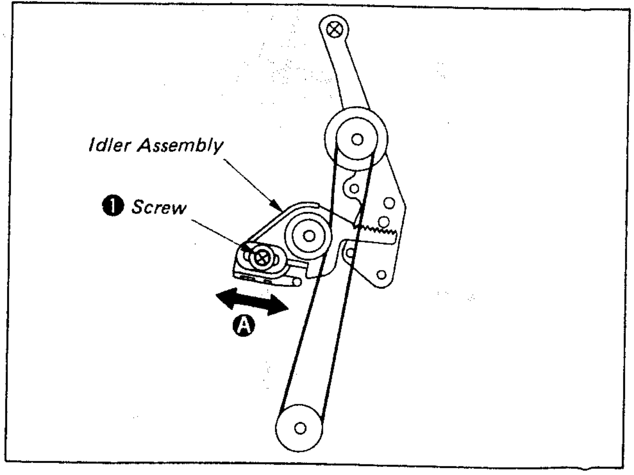


Fig. 2-61

### 2-3-24. Checking S and T Main Brake Torques

1) Open the control panel as instructed in section 2.
2) Remove the cassette compartment assembly as instructed in 2-1-1.

**1. S main brake torque**

1) Set up the FF/REW mode.
2) place the tension measuring reel (Ref. No. J-8) on the S reel table.
3) Pull the dial tension gauge (Ref. No. J-6) toward the arrow and check that the value satisfies the required value. (See Fig. 2-62 and 63.)

**2. T main brake torque**

1) Set up the FF/REW mode.
2) Place the tension measuring reel (Ref. No. J-8) on the T reel table.
3) Pull the dial tension gauge (Ref. No. J-6) toward the arrow and check that the value satisfies the required value. (See Fig. 2-64 and 65.)

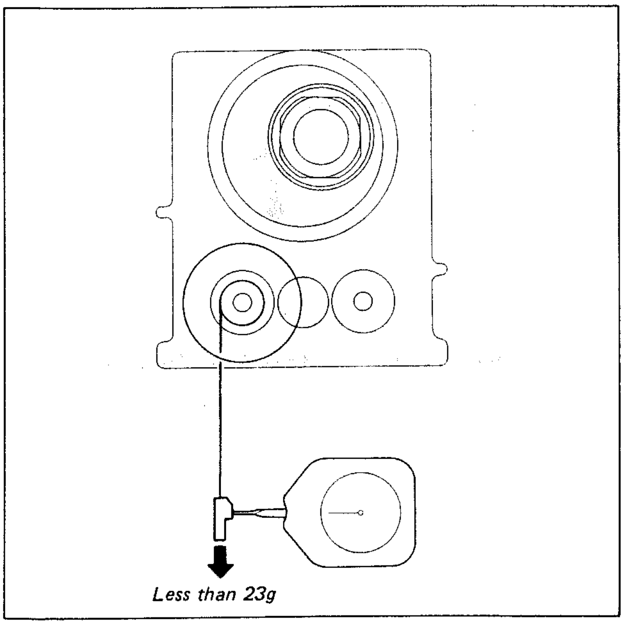


Fig. 2-62

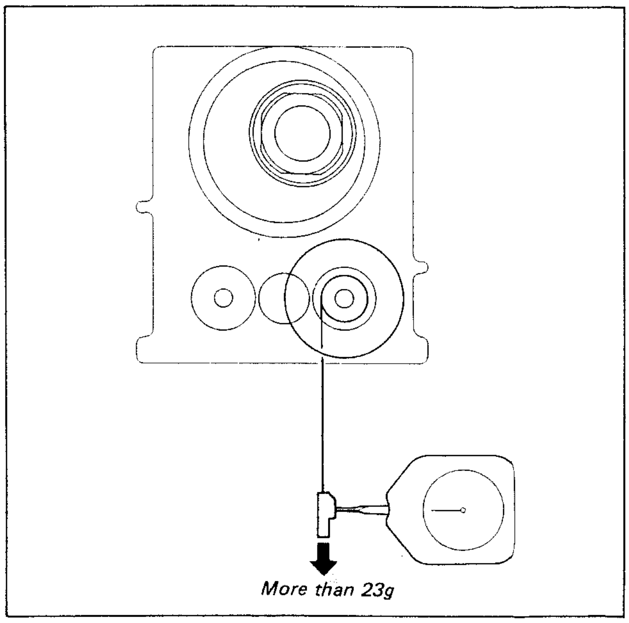


Fig. 2-64

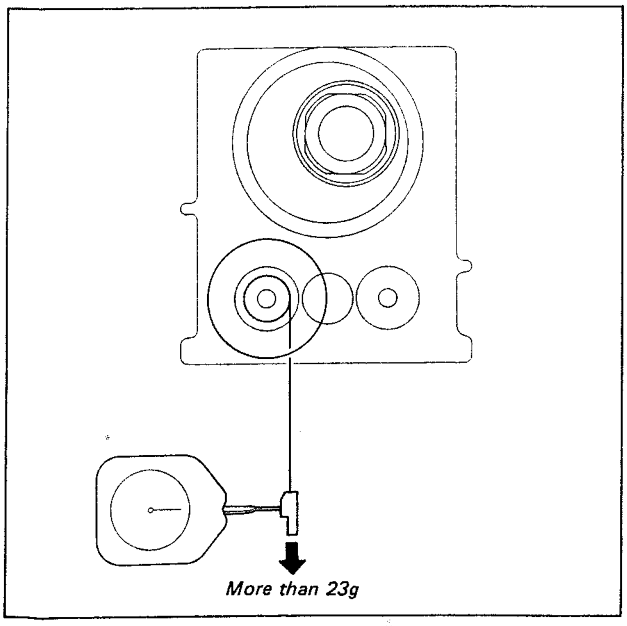


Fig. 2-63

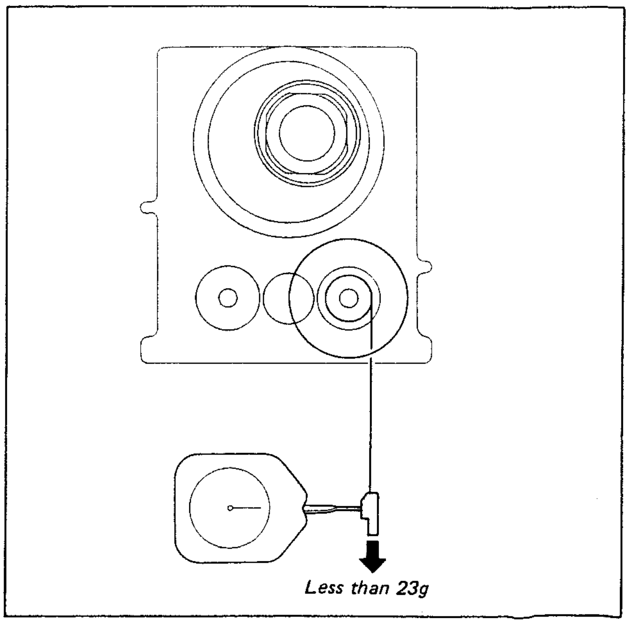


Fig. 2-65

### 2-3-25. Checking S and T Saft Brake Torques

1) Open the control panel as instructed in section 2.
2) Remove the cassette compartment assembly as instructed in 2-1-1.

#### 1. S soft brake torque

1) Set up the FF/REW mode.
2) Place the tension measuring reel (Ref. No. J-8) on the S reel table.
3) Release the S main brake with a finger.
4) Pull the dial tension gauge (Ref. No. J-6) toward the arrow and check that the value satisfies the required value. (See Fig. 2-66.)

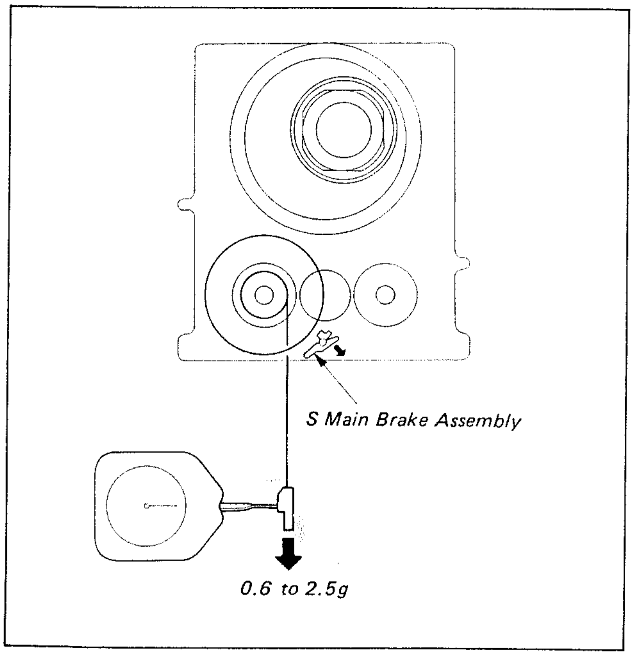


*Fig. 2-66*

#### 2. T soft brake torque

1) Set up the REV mode.
2) Place the tension measuring reel (Ref. No. J-8) on the T reel table.
3) Release the T main brake with a finger.
4) Pull the dial tension gauge (Ref. No. J-6) toward the arrow and check that the value satisfied the required value. (See Fig. 2-67.)

**Note:** In the REV mode, both the T soft brake and REW brake are engaged.

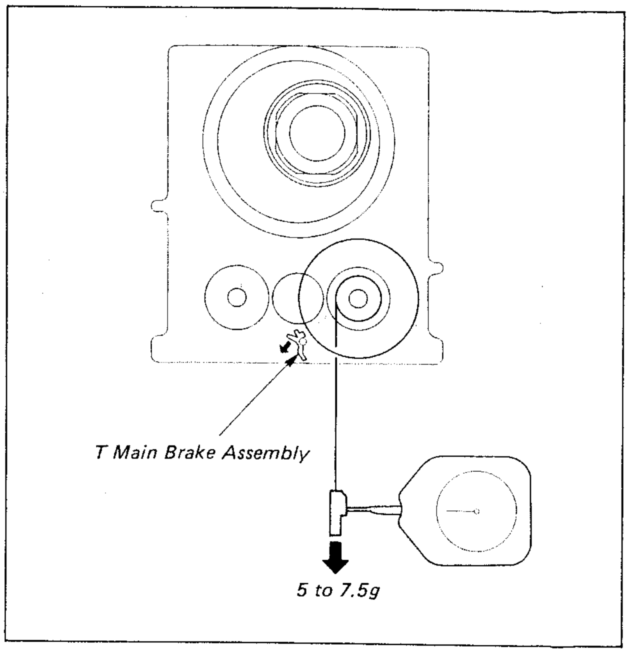


*Fig. 2-67*

### 2-3-26. Checking REV and REW Brake Torques

1) Open the control panel as instructed in section 2.
2) Remove the cassette compartment assembly as instructed in 2-1-1.

#### 1. REV brake torque

1) Set up the REV mode.
2) Place the tension measuring reel (Ref. No. J-8) on the S reel table.
3) Release the S main brake assembly with a finger.
4) Pull the dial tension gauge (Ref. No. J-6) toward the arrow and check that the value satisfies the required value. (See Fig. 2-68.)

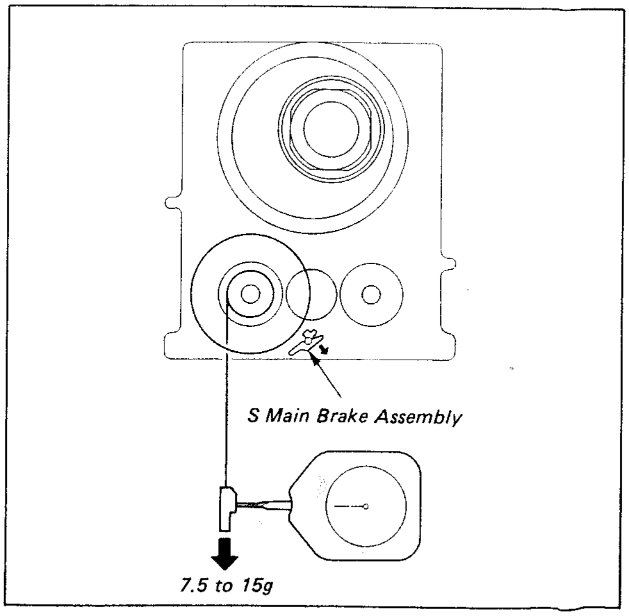


*Fig. 2-68*

**2. REW brake torque**

1) Set up the FF/REW mode.
2) Place the tension measuring reel (Ref. No. J-8) on the T reel table.
3) Release the T main brake with a finger.
4) Pull the dial tension gauge (Ref. No. J-6) toward the arrow and check that the value satisfies the required value. (See Fig. 2-69.)

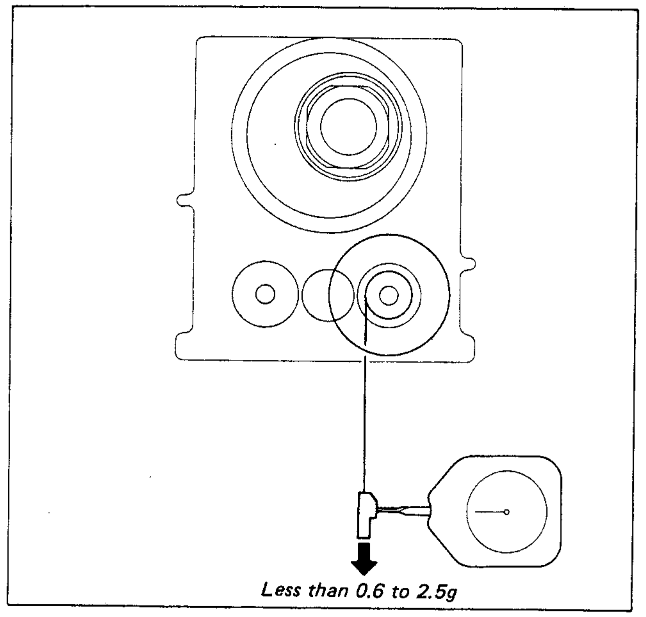
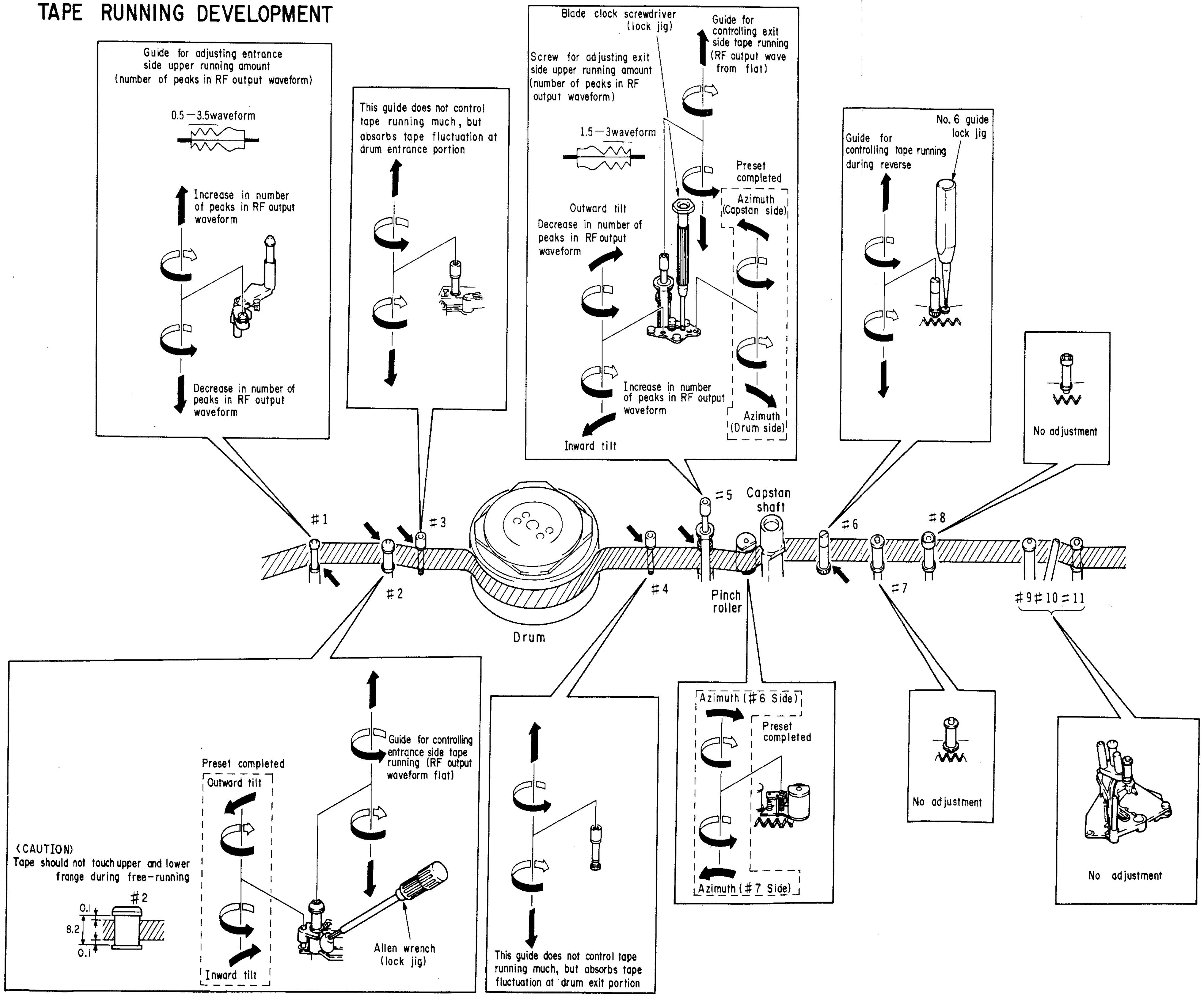


*Fig. 2-69*

### 2-3-27. Checking by FWD and RVS Take-Up Torque Cassette

1) Set the FWD and RVS take-up torque cassette (Ref. No. J-12).
2) Set up the PLAY BACK mode and check that the torque value on the T reel table side is 9.5 to 15.5g-cm.
3) Set up the PLAY BACK mode and check that the torque value on the S reel table side immediately after pressing the REW button is 17 to 23g-cm.
4) Replace the reel tables if the foregoing values are not satisfied.

# TAPE RUNNING DEVELOPMENT


Guide for adjusting entrance side upper running amount (number of peaks in RF output waveform)
0.5—3.5waveform
Increase in number of peaks in RF output waveform
Decrease in number of peaks in RF output waveform
This guide does not control tape running much, but absorbs tape fluctuation at drum entrance portion
Blade clock screwdriver (lock jig)
Screw for adjusting exit side upper running amount (number of peaks in RF output waveform)
1.5—3waveform
Guide for controlling exit side tape running (RF output wave from flat)
Preset completed
Azimuth (Capstan side)
Outward tilt
Decrease in number of peaks in RF output waveform
Increase in number of peaks in RF output waveform
Inward tilt
Azimuth (Drum side)
No. 6 guide lock jig
Guide for controlling tape running during reverse
No adjustment
#1
#2
#3
Drum
#4
#5
Capstan shaft
Pinch roller
#6
#7
#8
#9 #10 #11
Guide for controlling entrance side tape running (RF output waveform flat)
Preset completed
Outward tilt
Inward tilt
Allen wrench (lock jig)
(CAUTION)
Tape should not touch upper and lower frange during free-running
#2
0.1
8.2
0.1
This guide does not control tape running much, but absorbs tape fluctuation at drum exit portion
Azimuth (#6 Side)
Preset completed
Azimuth (#7 Side)
No adjustment
No adjustment

### 2-4. TAPE PATH ADJUSTMENT

- **Make tape path adjustment after checking that electrical adjustment is made.**

### 2-4-1. Preparation for Adjustment

1) Clean the parts on which the tape runs (tape guide, drum, capstan spindle and pinch roller).
2) Connect an oscilloscope as follows:
   1CH: Pin ③ of CN112 (AR-2 Board): CH-2 output
   2CH: Pin ② of CN112 (AR-2 Board): External trigger
   (See Fig. 2-70.)

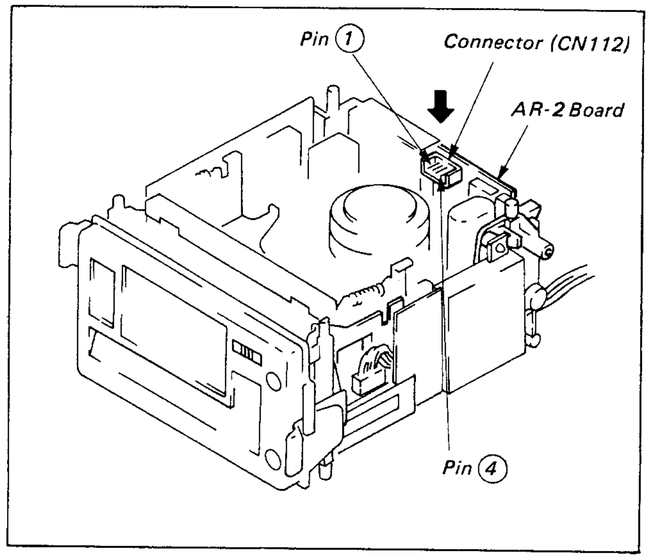

Pin ①
Connector (CN112)
AR-2 Board
Pin ④

*Fig. 2-70*

3) Replay the tracking alignment tape (WR5-1C) and check that the RF waveforms are flat (Fig. 2-71 ⓐ) on the inlet and outlet sides. If not, adjust as follows.

- If RF waveform on inlet side is not flat. (Fig. 2-71 ⓑ). . . Adjust as instructed in 2-4-2 Inlet side adjustment.
- If RF waveform on outlet side is not flat. (See Fig. 2-71 ⓒ) . . . Adjust as instructed in 2-4-3 Outlet side adjustment.

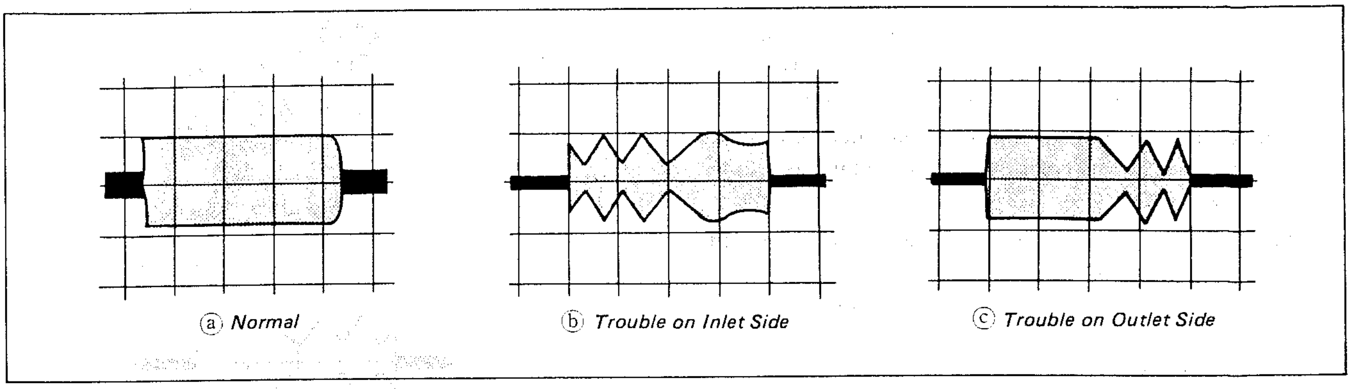

ⓐ Normal
ⓑ Trouble on Inlet Side
ⓒ Trouble on Outlet Side

*Fig. 2-71*

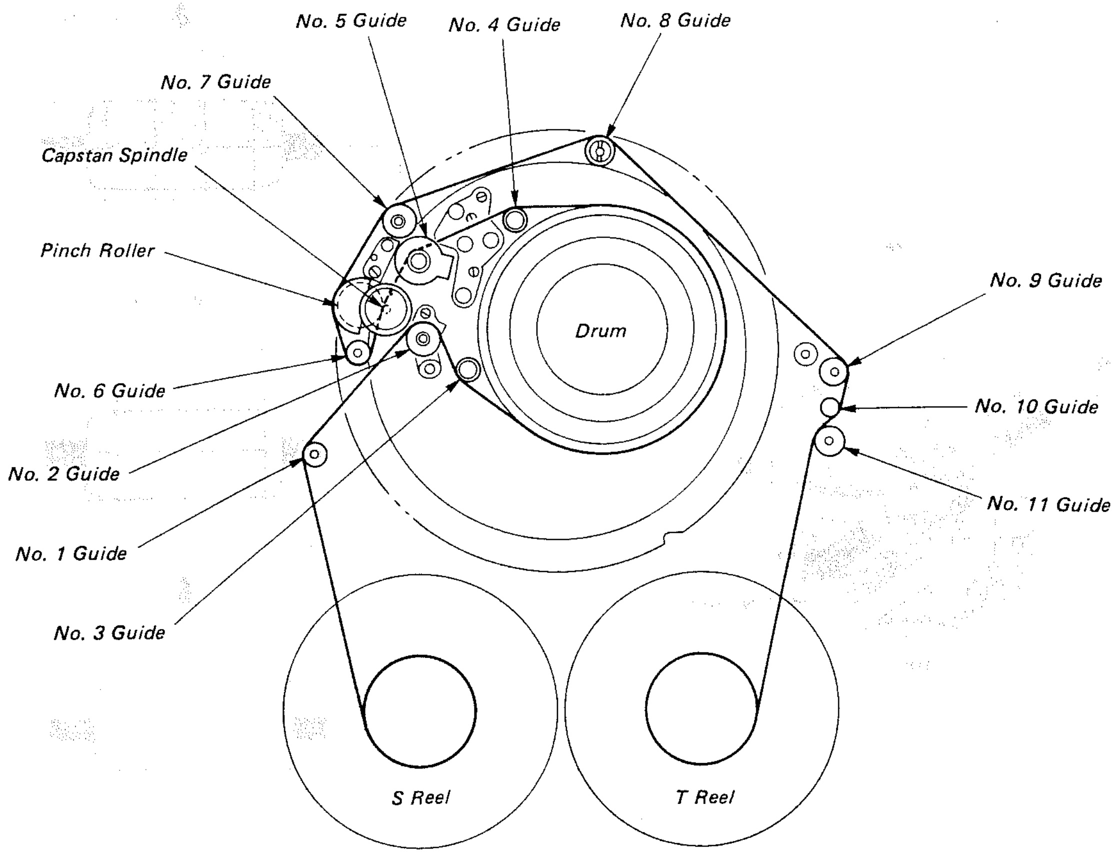

No. 5 Guide
No. 4 Guide
No. 8 Guide
No. 7 Guide
Capstan Spindle
Pinch Roller
No. 9 Guide
Drum
No. 6 Guide
No. 10 Guide
No. 2 Guide
No. 11 Guide
No. 1 Guide
No. 3 Guide
S Reel
T Reel

*Fig. 2-72 Tape Guide Layout*

### 2-4-2. Inlet Side Adjustment

1) Replay the tracking alignment tape, loose No. 2 guide lock screw ❶ , rotate No. 2 and 3 guides counter-clockwise, and free the tape run on the inlet side. (See Fig. 2-73.)

   **Note:** The space between the top and bottom flanges of No. 2 guide is narrow. Check that the tape is contacting neither top nor bottom flanges this time. The tape contacts the bottom flange and the RF waveform on the inlet side will have more than 3.5 ridges if No. 2 guide is too loose.

2) Check that the RF waveform on the inlet side has 0.5 to 3.5 ridges in this condition. If not, adjust as follows. (See Fig. 2-7-4.)

   **Note:** Do not touch the No. 2 guide gate screw ❷ since it has been preset at the factory.
   If off standard, adjust the height adjustment screw of the No. 1 guide (tension regulator assembly) by turning it clockwise 90° at a time. (See Fig. 2-75.)

3) Slowly rotate No. 2 guide clockwise to make the inlet side waveform nearly flat. (See Fig. 2-76.)

   **Note:** Do not rotate No. 2 guide excessively.

4) Rotate No. 3 guide clockwise to make the inlet side waveform completely flat, then rotate clockwise slightly (approximately 15°). (See Fig. 2-77.)
5) Check the tape curl of No. 3 guide flange. If tape is curled, rotate No. 2 guide clockwise little by little until the curling is eliminated.
6) Tighten No. 2 lock screw ❶ . (See Fig. 2-73.)

   **Note:** Check the adjustment as mentioned in 2-4-4.

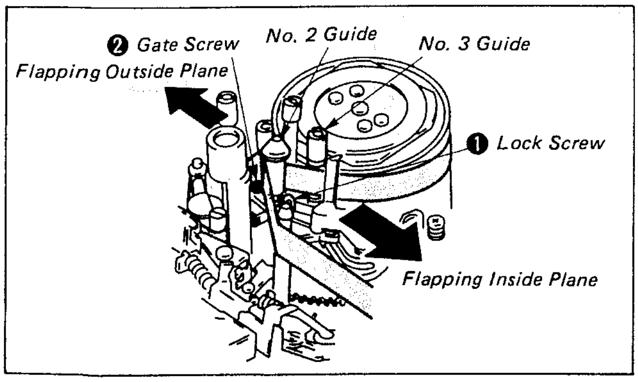

❷ Gate Screw
No. 2 Guide
No. 3 Guide
Flapping Outside Plane
❶ Lock Screw
Flapping Inside Plane

*Fig. 2-73*

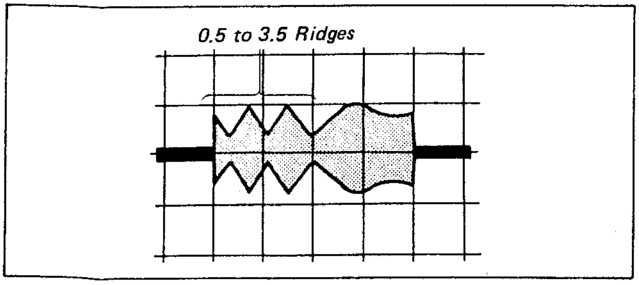

0.5 to 3.5 Ridges

*Fig. 2-74*

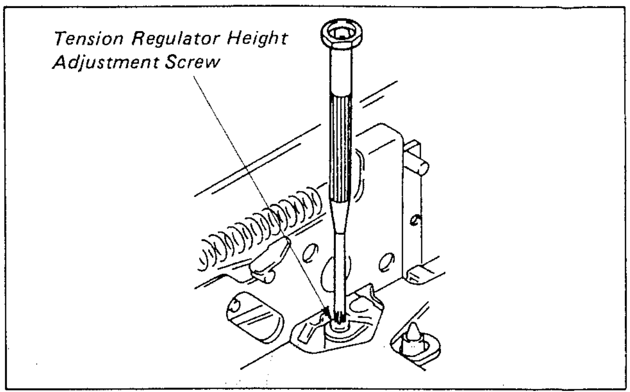

Tension Regulator Height Adjustment Screw

*Fig. 2-75*

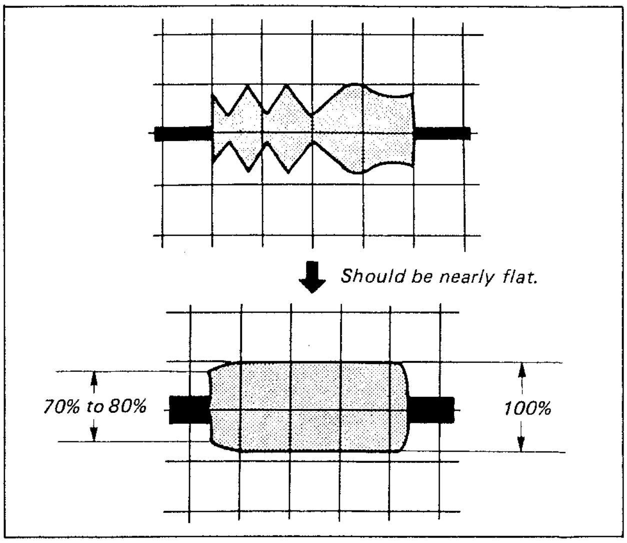

Should be nearly flat.
70% to 80%
100%

*Fig. 2-76*

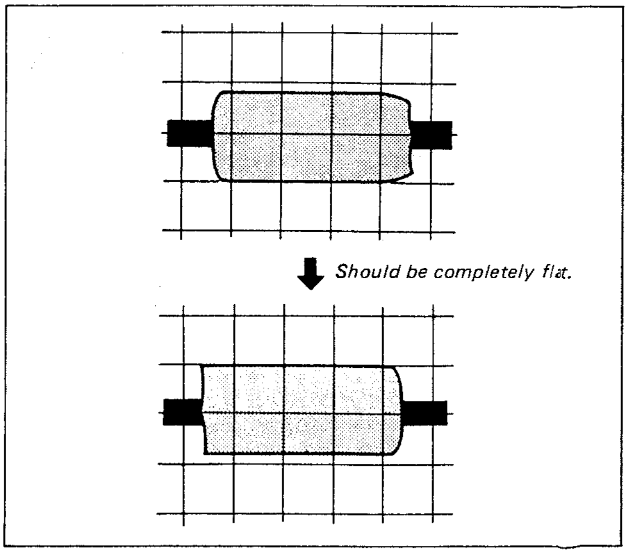

Should be completely flat.

*Fig. 2-77*

### 2-4-3. Outlet Side Adjustment

- Start this adjustment by removing the tape stopper as instructed in 1) of 1. Removal in 2-3-10.

1) Play back the tracking alignment tape, rotate No. 4 guide counterclockwise and No. 5 guide clockwise, respectively, then free the tape running on the outlet side. (See Fig. 2-78.)

**Note:**
- A screw lock agent sticking No. 5 guide nut may prevent the nut from rotating. Rotate the guide after immersing alcohol in the nut thread and dissolving the screw lock agent.
- Check that the tape is not contacting the top and bottom flanges of No. 5 guide during free tape running.

2) Check that the RF waveform on the outlet side has 1.5 to 3 ridges. If not, readjust as follows. (See Fig. 2-79.)

**If off standard**

i) Rotate the lock screw ❶ counterclockwise to loosen.
ii) Slowly rotate the gate screw ❷ by 45° and wait until the RF waveform changes.
iii) Rotate the lock screw ❶ clockwise to tighten. (See Fig. 2-78.)

**Note:**
- The waveform changes if the lock screw is tightened too tightly. Tighten moderately.
- Never rotate the azimuth screw of No. 5 guide.

3) Rotate No. 5 guide counterclockwise to make the RF waveform on the outlet side nearly flat. (See Fig. 2-80.)

**Note:** The waveform reaction is slow to nut rotation. Rotate the nut after the waveform variations are stabilized.

4) Rotate No. 4 guide clockwise to make the RF waveform on the outlet side completely flat and slightly rotate clockwise (approximately 15°) from this condition. (See Fig. 2-81.)

5) Check tape curling of No. 4 guide flange. Rotate No. 5 guide nut counterclockwise little by little until curling is eliminated if the tape is curled.

**Note:** Be sure to check as mentioned in 2-4-4 after making the adjustment.

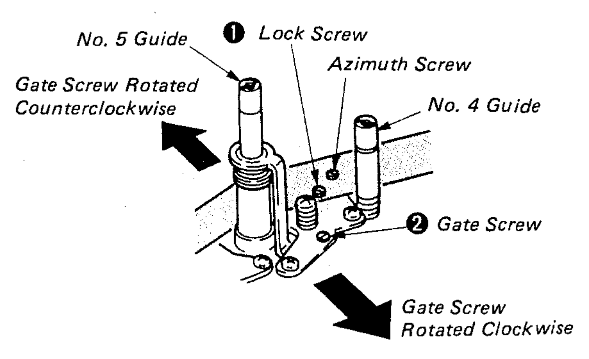

No. 5 Guide
❶ Lock Screw
Azimuth Screw
Gate Screw Rotated Counterclockwise
No. 4 Guide
❷ Gate Screw
Gate Screw Rotated Clockwise

Fig. 2-78

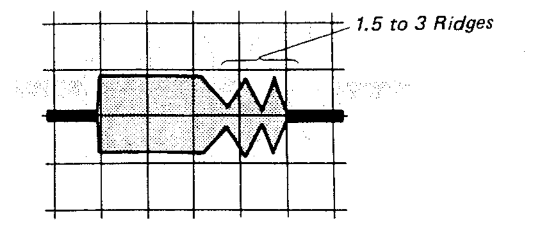

1.5 to 3 Ridges

Fig. 2-79

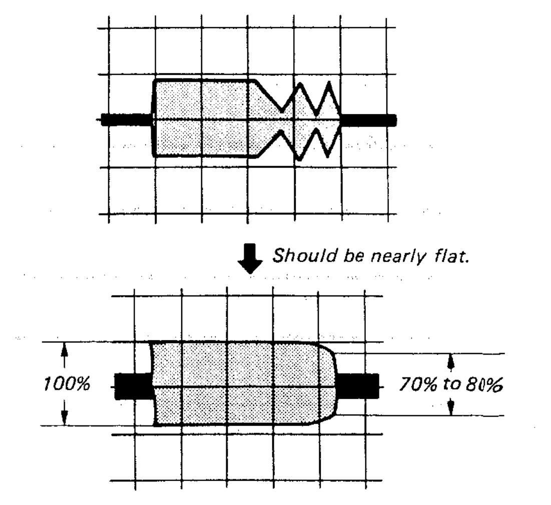

Should be nearly flat.
100%
70% to 80%

Fig. 2-80

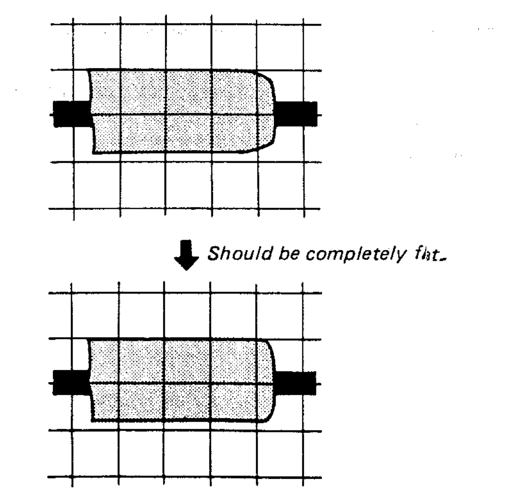

Should be completely flat.

Fig. 2-81

### 2-4-4. Checking After Adjustment

**1. Tracking check**

1) Record TV signals, play back recorded signals, and check that quality of both pictures and sounds is satisfactory.
2) Play back the tracking alignment tape and check that RF waveforms do not have large variations.
3) Set up the REV mode and check that the waveform noise pitches are uniform. If not, adjust as follows. (See Fig. 2-82.)

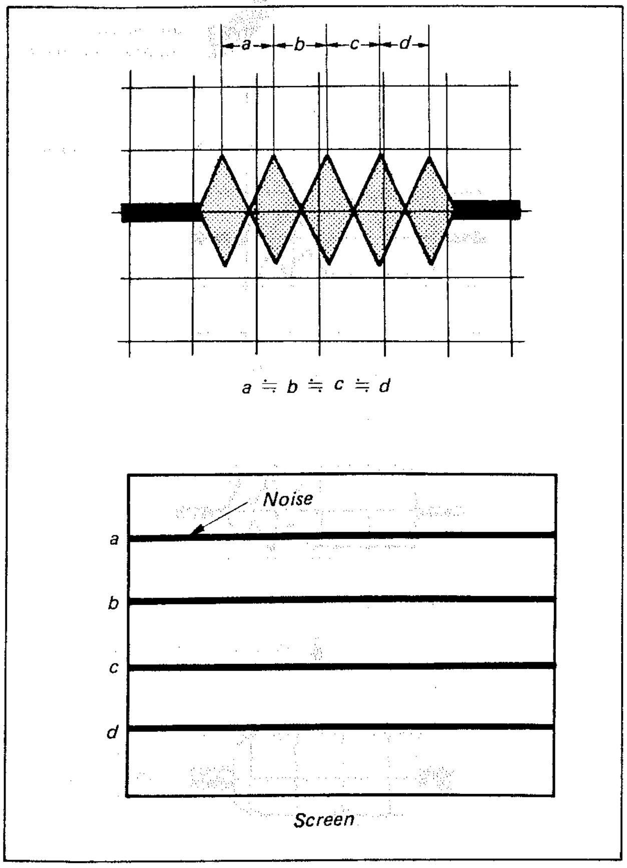


*Fig. 2-82*

**[Narrow noise pitch on inlet side (upper screen)]**

(See Fig. 2-83.)

Check that the RF waveforms are flat in the PLAYBACK mode.

**Waveform is not flat:**

Adjust the heights of No. 2 and 3 guides as in 2-4-2 Inlet side adjustment.

**Waveform is flat:**

Rotate No. 1 guide (tension regulator height adjusting screw) and No. 2 guide gate screw 90° counterclockwise to recheck. (See Fig. 2-75.)

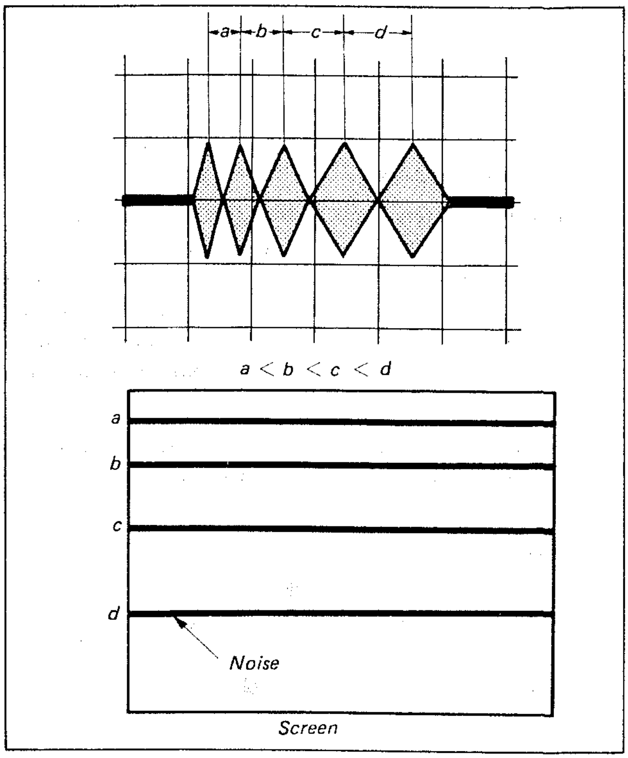


*Fig. 2-83*

**[Narrow noise pitch on outlet side (lower screen)]**

(See Fig. 2-84.)

Set up the PLAYBACK mode and adjust No. 4 and 5 guide heights as in 2-4-3. Outlet side Adjustment.

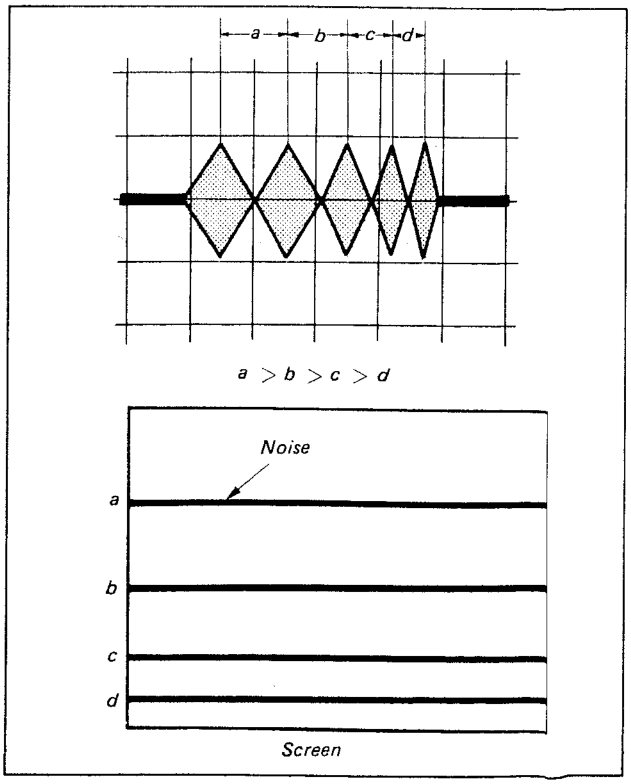


*Fig. 2-84*

**[Wide noise pitch on outlet side (lower screen)]**

(See Fig. 2-85.)

Set up the PLAYBACK mode and check that the RF waveform is flat.

**Waveform is not flat:**

Adjust height of No. 4 and 5 guides as in 2-4-3. Outlet side adjustment.

**Waveform is flat:**

Rotate the guide lower toothed wheel counterclockwise by No. 6 guide lock jig (Ref. No. J-11) to loosen the toothed wheel. Rotate No. 6 guide counterclockwise 45° to tighten the lower toothed wheel. Recheck the RF waveform of the REV mode. (See Fig. 2-86.)

**Note:** Wrinkles may be caused in Part Ⓐ between the capstan spindle and No. 5 guide if No. 6 guide is raised excessively. Check that no wrinkles are caused. (See Fig. 2-87.)

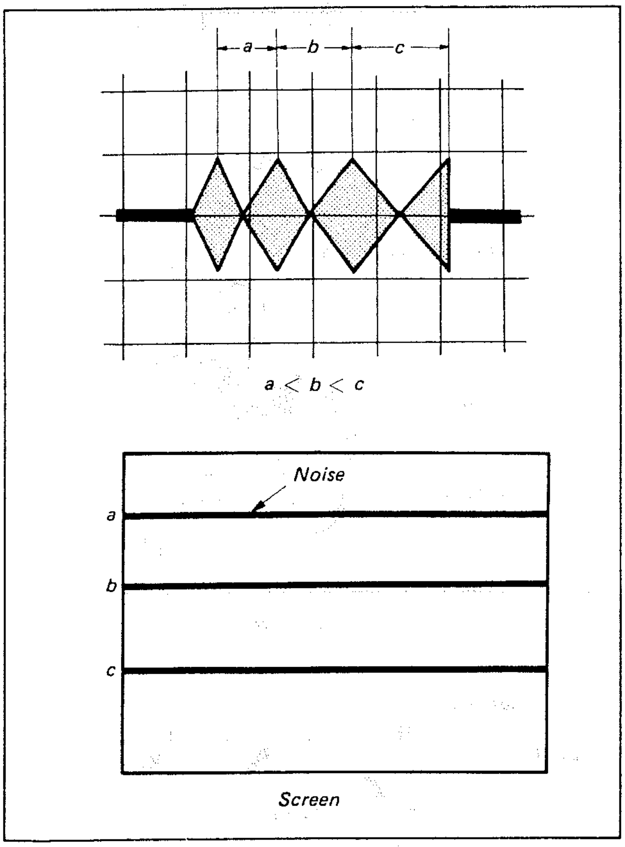

a
b
c
a < b < c
Noise
a
b
c
Screen

Fig. 2-85

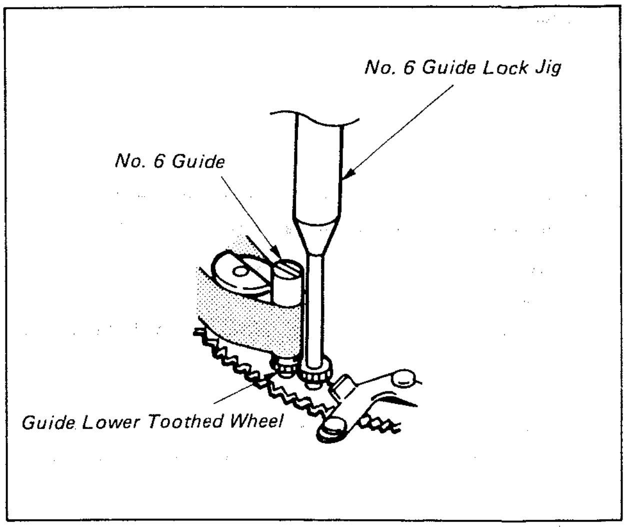

No. 6 Guide Lock Jig
No. 6 Guide
Guide Lower Toothed Wheel

Fig. 2-86

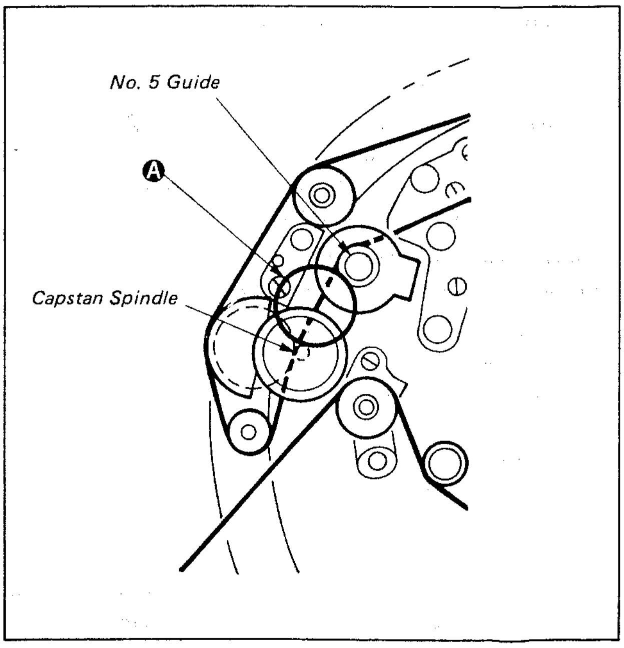

No. 5 Guide
A
Capstan Spindle

Fig. 2-87

### 2. Checking rising edge

1) Check that the RF waveform rises horizontally during playing back after finishing loading, after CUE/REV, and during playing back after FF. If not, adjust as follows.

**[Noise occurs on outlet side (lower screen) with rising during playing back after finishing loading]** (See Fig. 2-88.)

Check that the FWD back tension is not too low.

**If too low:**

Readjust as instructed in 2-3-22. FWD back tension adjustment.

**If normal:**

Rotate the azimuth screw of the pinch roller clockwise by 15° and adjust after rechecking the rising edge. (See Fig. 2-89.)

**[Noise occurs on outlet side (lower screen) with rising during playing back after REV]** (See Fig. 2-88.)

Loosen the guide lower toothed wheel of No. 6 guide using No. 6 guide lock jig, rotate No. 6 guide 90° counterclockwise to tighten the toothed wheel, then recheck the rising edge.

**Note:** Wrinkles may be caused in Part Ⓐ of Fig. 2-87 if No. 6 guide is raised excessively this time, between the capstan spindle and No. 5 guide, check that no wrinkles are caused.

**[Noise occurs on outlet side (lower screen) with rising during playing back after FF]** (See Fig. 2-88.)

Check that the FWD back tension is not too low.

**If too low:**

Readjust as required in 2-3-22. FWD back tension adjustment.

**If normal:**

Rotate the azimuth screw of the pinch roller clockwise by 15° and adjust after checking the rising edge. (See Fig. 2-89.)

**Note:** Be sure to check playback rising after finishing loading in case an adjustment is made.

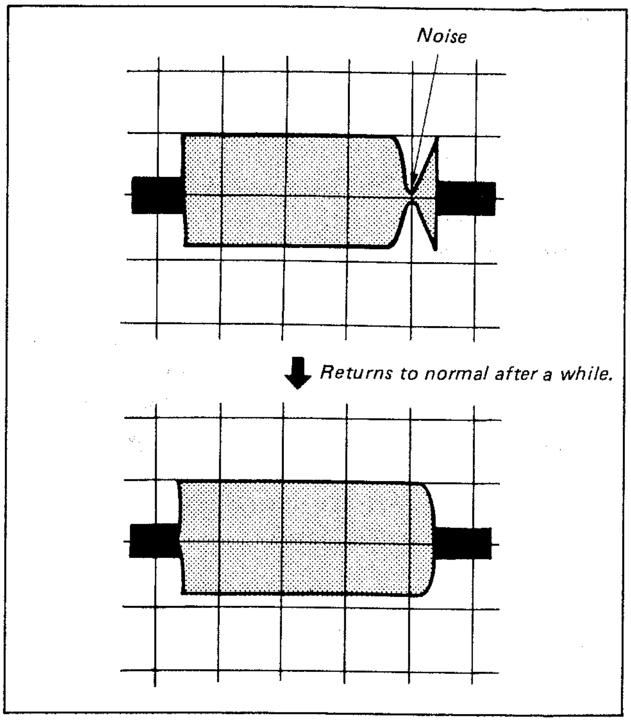

Noise
Returns to normal after a while.

*Fig. 2-88*

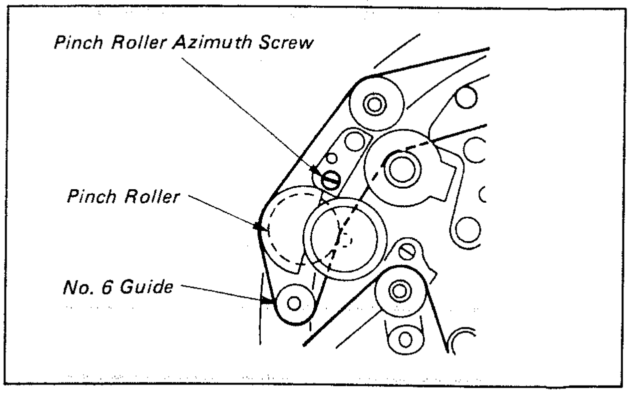

Pinch Roller Azimuth Screw
Pinch Roller
No. 6 Guide

*Fig. 2-89*

### 3. Tape run check

Check that the tape is not raised or curled at each guide flange of No. 1 to 6 (pointed by the arrows in Fig. 2-90) in PLAYBACK, CUE and REV modes.

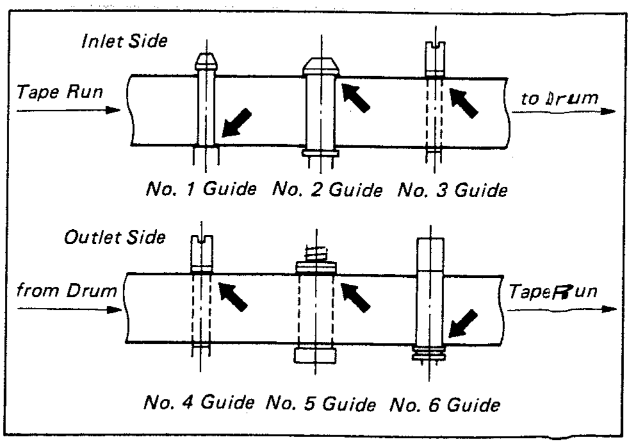

Inlet Side
Tape Run
to Drum
No. 1 Guide
No. 2 Guide
No. 3 Guide
Outlet Side
from Drum
Tape Run
No. 4 Guide
No. 5 Guide
No. 6 Guide

*Fig. 2-90*

# 3. VIDEO SECTION ADJUSTMENT

The following measuring instruments are needed in adjusting the video section.

**[Equipment]**

1) Monitor TV
2) AC adapter or T/T unit
3) Oscilloscope, 2 phenomena, band 10MHz or wider, with delay mode (Use a 10:1 probe unless otherwise specified)
4) Frequency counter
5) Pattern generator, with video output terminal
6) Digital voltmeter
7) Audio generator
8) Audio level meter
9) Audio distortion meter
10) Audio attenuator
11) Regulated power supply
12) Alignment tapes
    Tracking adjustment (WR5-1C)
    Parts code: 8-967-995-06
    Video frequency characteristic adjustment (WR5-2C)
    Parts code: 8-967-995-16
    Operation checking (WR5-3CL)
    Parts code: 8-967-995-36

**[Equipment Connection]**

Unless otherwise specified, adjustment is made by connecting the measuring instruments as shown below.

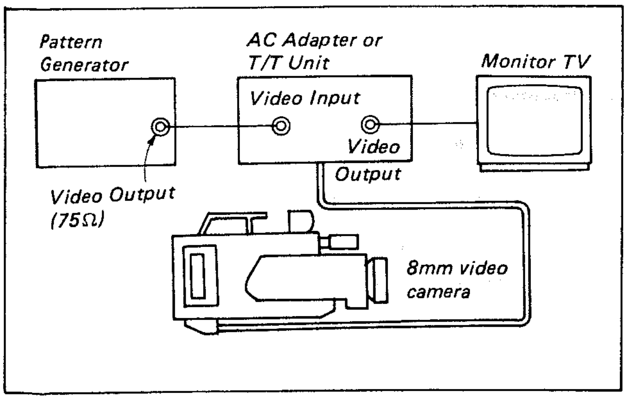

Pattern Generator
AC Adapter or T/T Unit
Monitor TV
Video Input
Video Output
Video Output (75Ω)
8mm video camera

Fig. 3-1

**Setting up during adjustment**

Video signals output by an pattern generator are used as adjustment signals when adjusting the video section, and these video output signals should be within the required standard. Connect an oscilloscope to TP121 (VIDEO IN) on the VI-7 Board. Check that the amplitudes of video signal SYNC signals, of picture portions, and of burst signals are flat at approximately 0.3, 0.7, and 0.3V, respectively, and that the level ratio of the burst signals and "red" signals are 0.30:0.66.

Fig. 3-2 shows video signals (colour bars) used in adjusting the video section.

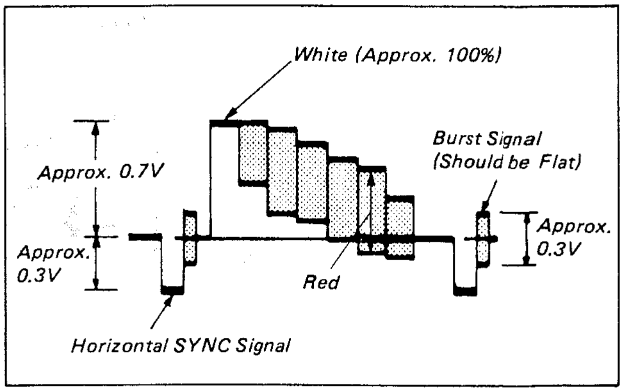
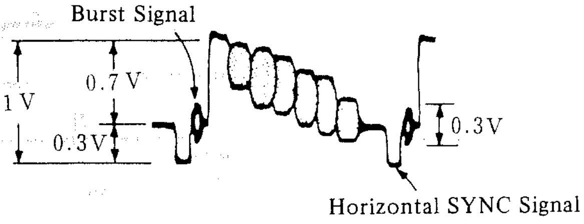
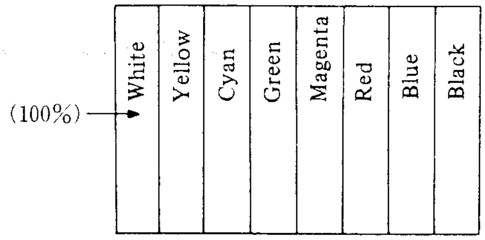

White (Approx. 100%)
Burst Signal (Should be Flat)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal SYNC Signal

*Fig. 3-2 Pattern Generator Colour Bar Signals*

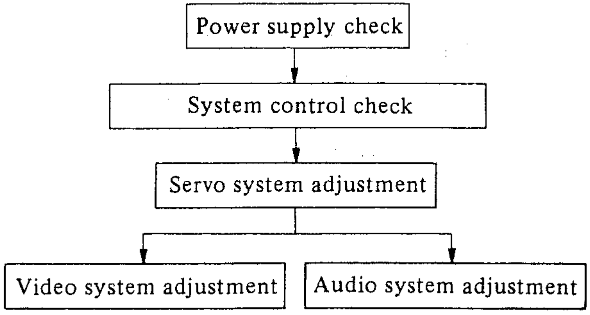
| Tape | Content | Use |
|---|---|---|
| Tracking<br>(WR5-1C) | 1. Recording area: PCM – video<br>2. Recording content: CH2: 1MHz linearity adjustment signal (CH1: 9MHz) | Drum linearity adjustment |
| Video Frequency Characteristic<br>(WR5-2C) | 1. Recording area: Video<br>2. Recording content: RF sweep 0 to 10MHz<br>3. Marker: 1, 3.58, 5.5 and 7MHz | Frequency characteristic adjustment |
| Operation Checking<br>(WR5-3CL) | 1. Recording area: Video<br>2. Recording content:<br>● Video signals Colour bars 10sec, Monoscope 8sec } Iterative<br>(Colour bars)<br><br> Burst Signal<br>1 V<br>0.7 V<br>0.3V<br>0.3V<br>Horizontal SYNC Signal<br><br> (100%)<br>White<br>Yellow<br>Cyan<br>Green<br>Magenta<br>Red<br>Blue<br>Black<br>● Audio signals<br>400Hz 60% modulation | Operation checking |

### Input/output level and impedance to T/T unit or AC adapter

Video input pin jack
  Input signals: 1Vp-p, 75Ω unbalanced, sync negative
Video output pin jack
  Output signals: 1Vp-p, 75Ω unbalanced, sync negative
Audio input pin jack
  Input level: –6dBs (0dBs = 0.775Vrms)
  Input impedance: 47kΩ or higher
Audio output pin jack
  Regulated output: –6dBs
  Load impedance: 47kΩ or higher

**Adjustment Procedure**

Adjust in the following sequence:


Power supply check
System control check
Servo system adjustment
Video system adjustment
Audio system adjustment

### 3-1. POWER SUPPLY CHECK (VI-7 Board)

Mode: E-E

Digital voltmeter: + probe: Pin ③ of CN006
– probe: Pin ⑥ of CN006

[Checking Method]

Must be 5.0 ±0.15V dc.

## 3-2. SYSTEM CONTROL ADJUSTMENT

### 3-2-1. Battery Failure Adjustment (HS-5, SK-8 Board)

Cassette holder: A cassette tape should not be contained.
Multiconnector: Nothing shall be connected.
Regulated power supply and digital voltmeter: See Fig. 3-3.
Oscilloscope CH1: TP604 (SK-8 Board)
CH2: TP606 (SK-8 Board)

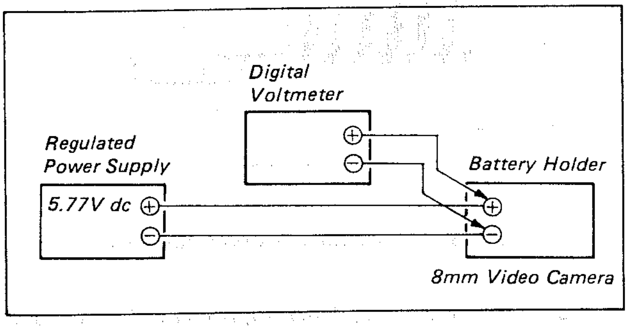


Fig. 3-3

[Adjustment Method]

1) Set the regulated power supply to 5.77V dc and turn on "VTR POWER".
2) Short TP603 and TP604 on the SK-8 Board by a jumper wire.
3) Rotate RV601 on the HS-5 Board and set to the position where a pulse is generated on CH2. (See Fig. 3-4.)
4) Rotate RV601 slowly in an opposite direction and stop it when the CH2 pulse disappears.
5) Disconnect the jumper wire.

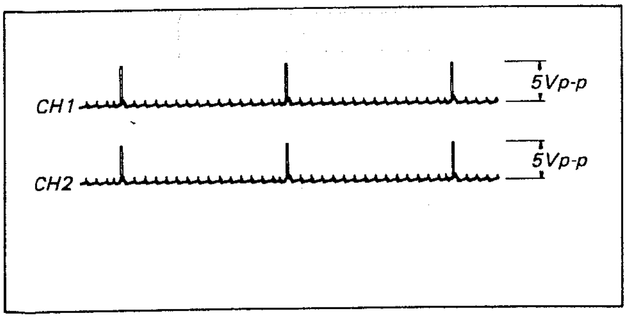


Fig. 3-4 Battery Failure Adjustment

### 3-2-2. Flying Erase Check (FE-4 Board)

Mode: RECORD
Oscilloscope: TP101

[Checking Method]

The oscillation frequency shall be 7MHz or more and level, 8.5Vp-p or more.

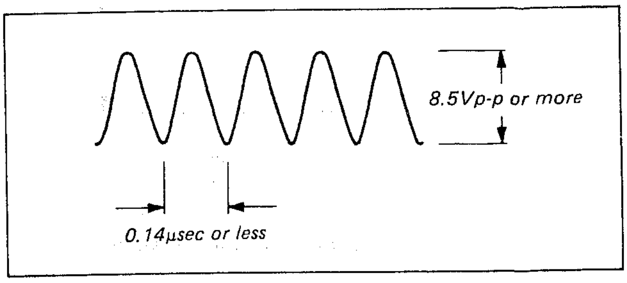


Fig. 3-5 Flying Erase Check

## 3-3. SERVO SYSTEM ADJUSTMENT

### 3-3-1. MOTOR POWER Voltage Adjustment (MC-8 Board)

Mode: E-E
Digital voltmeter: Pin ① of CN501

[Adjustment Method]

Adjust to 5.30 ±0.05V dc with RV601.

### 3-3-2. Capstan Free Speed Adjustment (SV-14 and AR-2 Boards)

Adjust in the sequence of SP mode and LP mode. Adjusting devices of LP mode are shown in [ ].

Mode: PLAYBACK
Tape: None recorded
Frequency counter: TP501 of SV-14 Board (CAP SP)
Connection 1: Connect TP104 (Pin ⑬ of IC101) and TP101 (REG GND) on the AR-2 Board using a 22µF/6.3V electrolytic capacitor. (TP104 is positive pole side)
Connection 2: Connect Pin ③ of CN512 (ATFLOCK) and Pin ④ of CN512 (GND) on the SV-14 Board using a jumper wire.

[Adjustment Method]

1) Set REC mode switch to SP mode [LP mode] and turn on VTR POWER.
2) Set up the PLAYBACK mode and adjust to 1341 ±2Hz [670 ±1Hz] using RV504 [RV503] on the SV-14 Board.

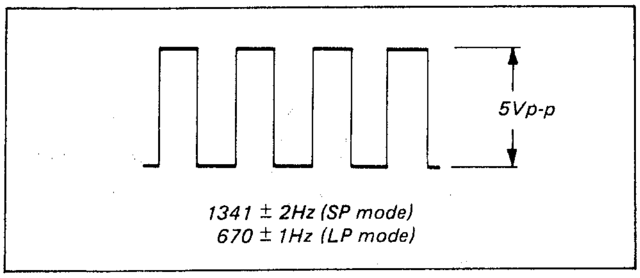

5Vp-p
1341 ± 2Hz (SP mode)
670 ± 1Hz (LP mode)

*Fig. 3-6 Capstan Free Speed Adjustment*

### 3-3-3. ATF Balance Adjustment (VI-7 and AR-2 Boards)

Mode: PLAYBACK
Alignment tape. Operation checking (WR5-3CL)
Oscilloscope: AR-2 Board Pin ④ of CN112 (RF CH1)

[Adjustment Method]

Maximize the RF output level with RV110 on the VI-7 Board.

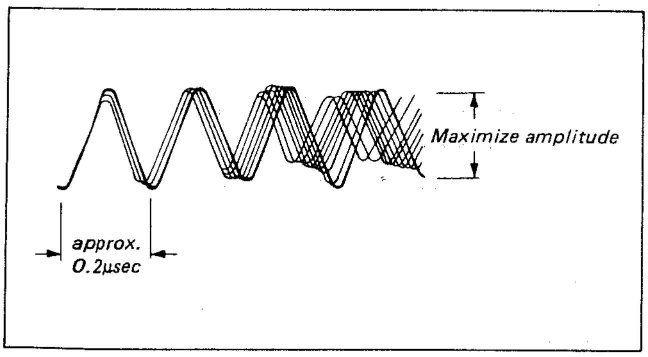

Maximize amplitude
approx. 0.2μsec

*Fig. 3-7 ATF Balance Adjustment*

### 3-3-4. Switching Position Adjustment (SV-14, VI-7 and AR-2 Boards)

Mode: PLAYBACK
Alignment tape: Operation checking (WR5-3CL)
Oscilloscope CH1: VI-7 Board TP108 (VIDEO OUT)
CH2: AR-2 Board Pin ② of CN112 (RF SW PULSE)

[Adjustment Method]

Adjust to 6.5 ±0.3H (416 ±20μsec) using RV502 on the SV-14 Board.

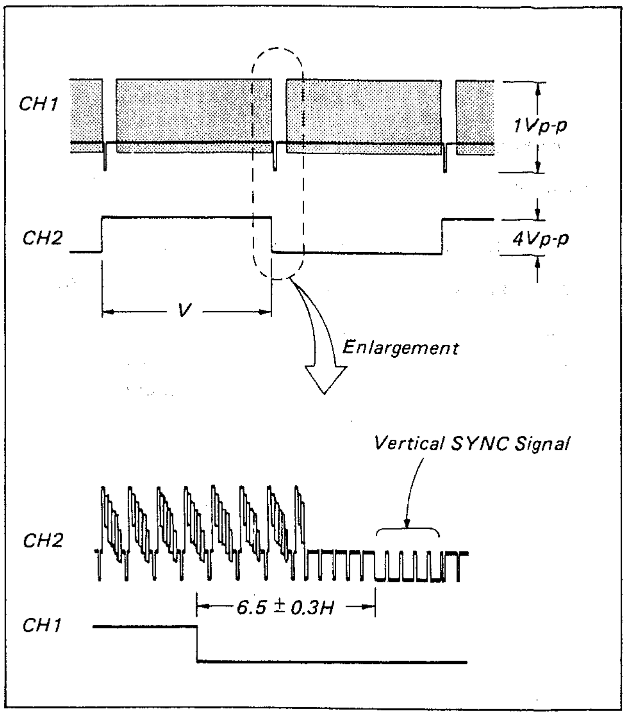

CH1
1Vp-p
CH2
4Vp-p
V
Enlargement
Vertical SYNC Signal
CH2
6.5 ± 0.3H
CH1

*Fig. 3-8 Switching Position Adjustment*

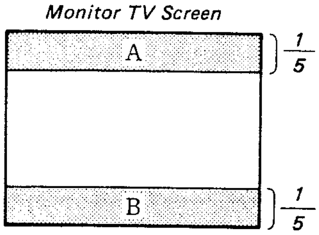
### 3-3-5. PB Pause Delay Time Adjustment (SV-14 Board)

Mode: PLAYBACK → PLAYBACK PAUSE
Tape: Operation checking (WR5-3CL)

[Adjustment Method]

Adjust while watching the monitor TV.

1) Set up the PLAYBACK mode and press the PAUSE button when playback pictures stabilize to set up the PLAYBACK PAUSE mode.
2) Check that noise is not shown on the TV screen in the PLAYBACK PAUSE mode. (See Fig. 3-9.)
3) Rotate RV501 and repeat Steps 1) and 2) if noise appears.


Monitor TV Screen
A
1/5
B
1/5

*Noise standard: Noise should not appear in parts other than Part A or B.*

*Fig. 3-9 PLAYBACK PAUSE Delay Time Adjustment*

## 3-4. VIDEO SYSTEM ADJUSTMENT

In principle, adjust the video system in the following procedure.

Colour video signals fed by a pattern generator are utilized as video input signals for video system adjustment in the RECORD mode. Check that the SYNC and colour burst signals match the standard designated in adjustment setting up shown in Fig. 3-2.

**[Adjustment Procedure]**

1) Playback frequency characteristic adjustment
2) PB Y trap adjustment
3) X'tal oscillator fo adjustment
4) 375 fH VCO adjustment
5) Y comb AGC adjustment
6) C comb AGC adjustment
7) SYNC AGC adjustment
8) VIDEO OUT level adjustment
9) PB Y level adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12 AC clip adjustment
13) Carrier balance adjustment
14) Chroma emphasis fo adjustment
15) REC C RF Trap adjustment
16) fH VCO adjustment
17) GCA GAIN adjustment
18) REC Y recording current adjustment
19) REC C recording current adjustment
20) REC ATF recording current adjustment

### 3-4-1. Playback Frequency Characteristic Adjustment (AR-2 Board)

CH2 adjusting devices are shown in [ ].

Moed: PLAYBACK

Alignment tape: Frequency characteristic adjustment (WR5-2C)

Oscilloscope CH1: Pin ④ of CN112 [Pin ③ of CN112]

External trigger: Pin ② of CN112 [Pin ② of CN112]

Trigger slope: +, [−]

**[Adjustment Method]**

Adjust the ratio between the 3.58 and 5.5MHz levels to 4:3 using RV102 [RV106].

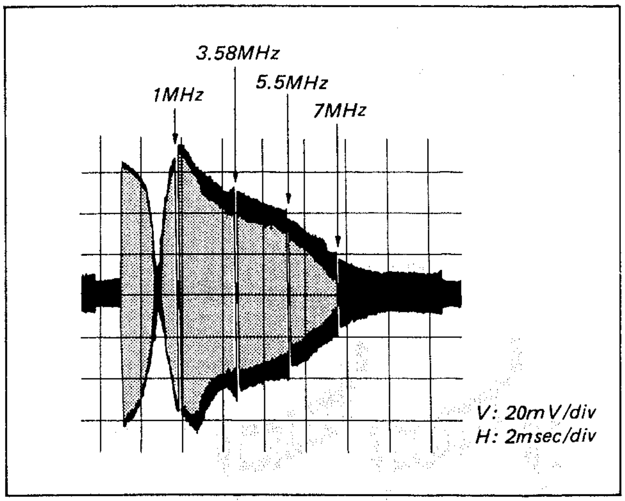


*Fig. 3-10 Playback Frequency Characteristic Adjustment*

### 3-4-2. PB Y Trap Adjustment (AR-2 Board)

Mode: Self-recording and PLAYBACK

Input signals: Colour bar

**[Adjustment Method]**

1) Record.
2) Play back recorded portions.
3) Rotate LV101 while watching the monitor TV screen and stop rotating when the beat is minimum.

### 3-4-3. X'tal Oscillator fo Adjustment (VI-7 Board)

Mode: PLAYBACK

Alignment tape: For operation checking (WR5-3CL)

Frequency counter: Pin③ of CN110

**Note:** Connect the frequency counter through a buffer with high impedance (approx. 10MΩ) and low capacity (less than 10pF).

**[Adjustment Method]**

Adjust to 4.433619 ±50Hz with CV101.

### 3-4-4. 375fH VCO Adjustment (VI-7 Board)

Mode: E-E

Input signals: Colour bar

Digital voltmeter: Pin ㉖ of IC104

**[Adjustment Method]**

Adjust to 3.00 ±0.05V dc with RV111.

### 3-4-5. Y Comb AGC Adjustment (VI-7 Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ⑨ of IC102

Connect a 22kΩ resistor serially between Pin ⑨ of IC102 and 10:1 probe.

**[Adjustment Method]**

Adjust to 50 ± 25mVp-p with RV108.

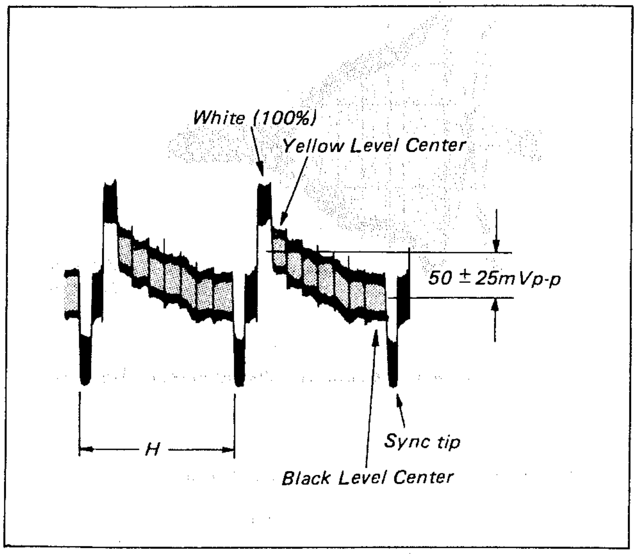

White (100%)
Yellow Level Center
50 ± 25m Vp-p
H
Sync tip
Black Level Center

*Fig. 3-11 Y Comb AGC*

### 3-4-6. C Comb AGC Adjustment (VI-7 Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ㉖ of IC102 or Pin ③ of CN014 on the EX-3 board.
Connection: Connect Q113 base to REG GND.

**[Adjustment Method]**

Adjust RV107 and LV103 alternately to minimize residual chroma components.

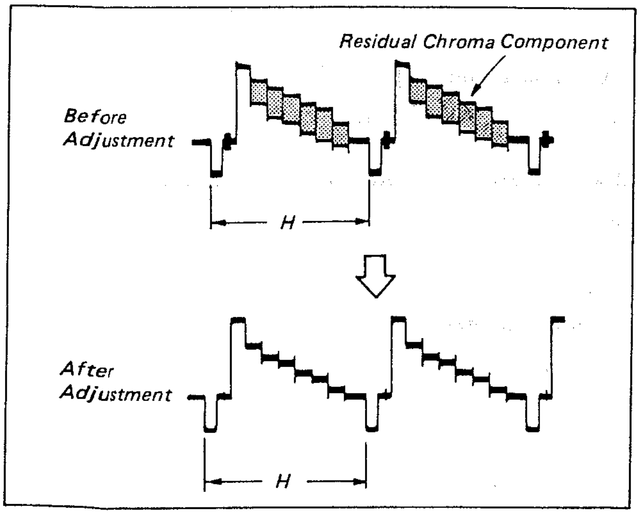

Residual Chroma Component
Before Adjustment
H
After Adjustment
H

*Fig. 3-12 C Comb AGC Adjustment*

### 3-4-7. SYNC AGC Adjustment (VI-7 Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ㊲ of IC101 or Pin ⑦ of CN014 on the EX-3 board.

**[Adjustment Method]**

Adjust to 0.5 ±0.01Vp-p with RV102.

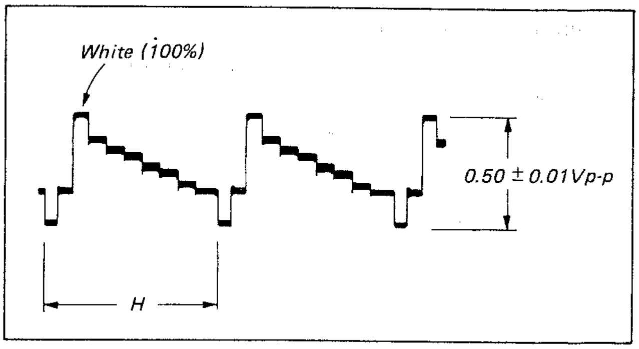

White (100%)
0.50 ± 0.01 Vp-p
H

*Fig. 3-13 SYNC AGC Adjustment*

### 3-4-8. VIDEO OUT Level Adjustment (VI-7 Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: TP108 (VIDEO OUT)
An AC adapter or T/T unit must be connected to the multiconnector.

**[Adjustment Method]**

Adjust to $1.00^{+0.025}_{-0.05}$ Vp-p with RV101.

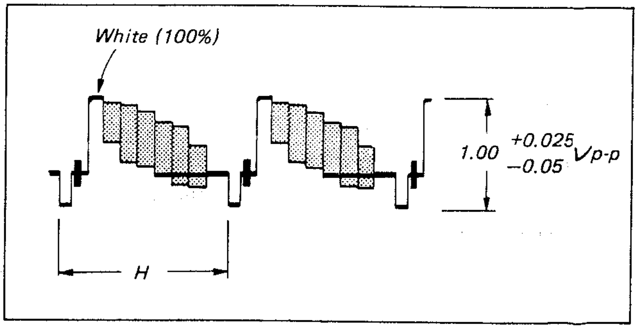

White (100%)
1.00 +0.025 −0.05 Vp-p
H

*Fig. 3-14 VIDEO OUT Level Adjustment*

### 3-4-9. PB Y Level Adjustment (VI-7 Board)

Mode: PLAYBACK
Alignment tape: For operation checking, (WR5-3CL) colour bar portion
Oscilloscope: TP108 (VIDEO OUT)
An AC adapter or T/T unit must be connected to the multiconnector.

**[Adjustment Method]**

Adjust to 1.00 ±0.05Vp-p with RV106.

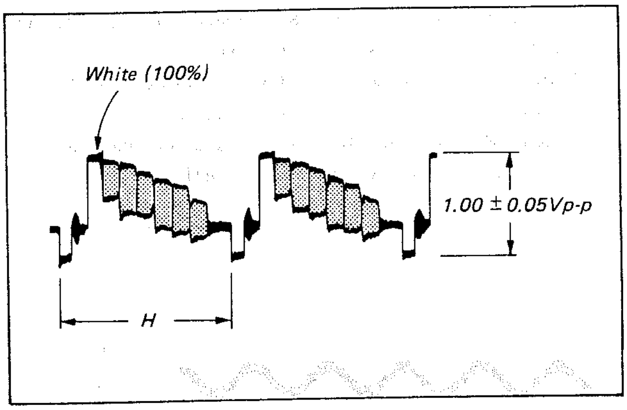


*Fig. 3-15 PB Y Level Adjustment*

### 3-4-10. Y FM Carrier Frequency Adjustment (VI-7 Board)

Mode: E-E
Input signal: None
Frequency counter: Pin ⑥ of CN009 (REC Y RF)
Oscilloscope: Pin ⑥ of CN009 (REC Y RF)
Digital voltmeter: The center of RV104 (AC clip) or Pin ㉚ of IC101

**[Adjustment Method]**

1) Minimize the voltage (approx. 2.4V dc) of Pin ㉚ of IC101 with RV104.
2) Adjust to 4.20 ±0.04MHz with RV103 (Carrier).
   Check the waveform level.
   Standard: 0.53 ±0.08Vp-p
3) Perform steps required in 3-4-12. AC Clip Adjustment.

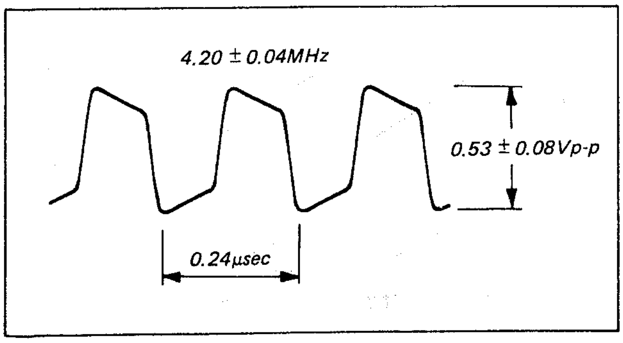


*Fig. 3-16 Y FM Carrier Frequency Adjustment*

### 3-4-11. Y FM Deviation Adjustment (VI-7 Board)

Adjustments of VIDEO OUT level, PB Y level, and Y FM carrier frequency must be finished.

Mode: Self-recording and PLAYBACK
Input signals: Colour bar
Oscilloscope: TP108 (VIDEO OUT)
An AC adapter or T/T unit must be connected to the multiconnector.

**[Adjustment Method]**

1) Record colour bar signals.
2) Play back recorded portions.
3) Check the playback output level.
   Standard: 1.00 ±0.04Vp-p
4) Rotate RV105 as follows and repeat Steps 1) through 3) when the value does not satisfy the standard.

| | RV105 rotation direction seen from component side |
|---|---|
| Larger than standard value | Clockwise (↷) |
| Smaller than standard value | Counterclockwise (↶) |

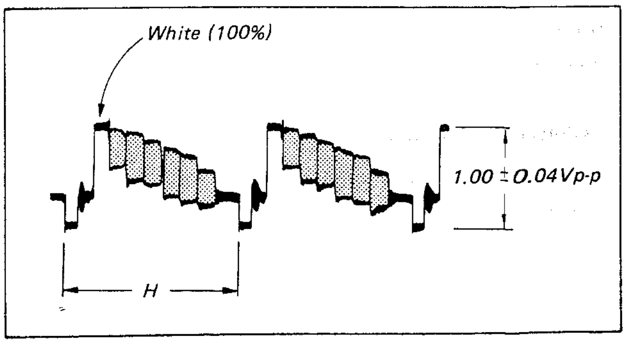


*Fig. 3-17 Y FM Deviation Adjustment*

### 3-4-12. AC Clip Adjustment (VI-7 Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ㉔ of IC101

**[Adjustment Method]**

Adjust the peak of white (100%) portion to 250 ±10% with RV104.

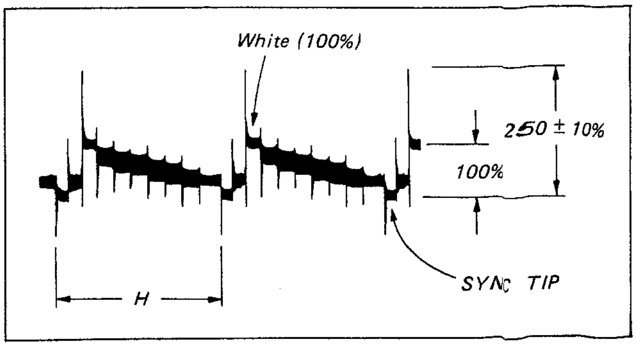


*Fig. 3-18 AC Clip Adjustment*

### 3-4-13. Carrier Balance Adjustment (VI-7 Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ㊵ of IC104

**[Adjustment Method]**

Minimize the 5.17MHz component with RV109.

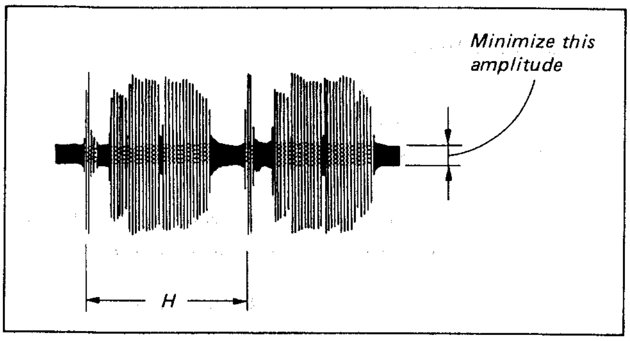


*Fig. 3-19 Carrier Balance Adjustment*

### 3-4-14. Chroma Emphasis fo Adjustment (VI-7 Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ⑪ of IC103

**[Adjustment Method]**

Minimize the amplitude of the flat portions of chroma signals with FL102.

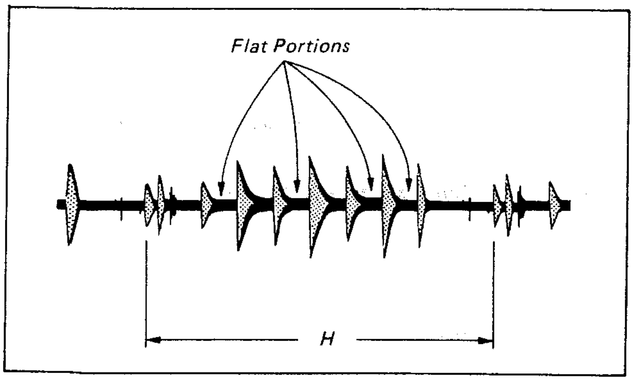


*Fig. 3-20 Chroma Emphasis fo Adjustment*

### 3-4-15. REC C RF Trap Adjustment (VI-7 and AR-2 Boards)

Mode: E-E
Input signals: None
Oscilloscope: Pin ② of CN009 on the VI-7 board
Frequency counter: Pin ⑬ of IC401 on the AR-2 board
Connection: Connect Pin ㊵ of IC104 on the VI-7 board and Pin ⑭ of IC401 on the AR-2 board using a 0.01μF capacitor.

**[Adjustment Method]**

1) Adjust RV402 on the AR-2 board so that the AFM Carrier Frequency is 1.41 ±0.01MHz.
2) Minimize the residual 1.41MHz component of Pin ② of CN009 with LV102 on the VI-7 board.
3) Adjust RV402 on the AR-2 board so that the AFM Carrier Frequency is 1.500 ±0.002MHz.

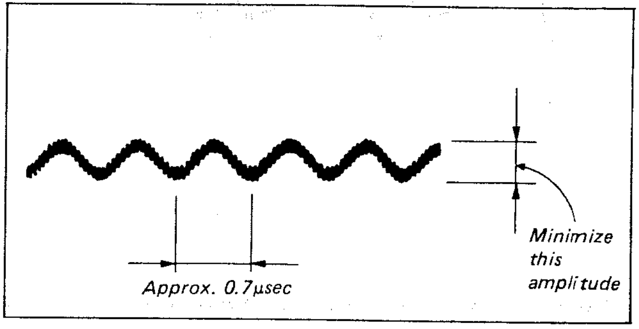


*Fig. 3-21 REC C RF Trap Adjustment*

### 3-4-16. fH VCO Adjustment (VI-7 Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: CH1: Pin ⑬ of IC108
CH2: TP121 (VIDEO IN)

**[Adjustment Method]**

1) Adjust RV112 so that the TR of CH1 is 16.0 ±0.5μsec.
2) Confirm that the H (time) of CH1 and CH2 is stable.

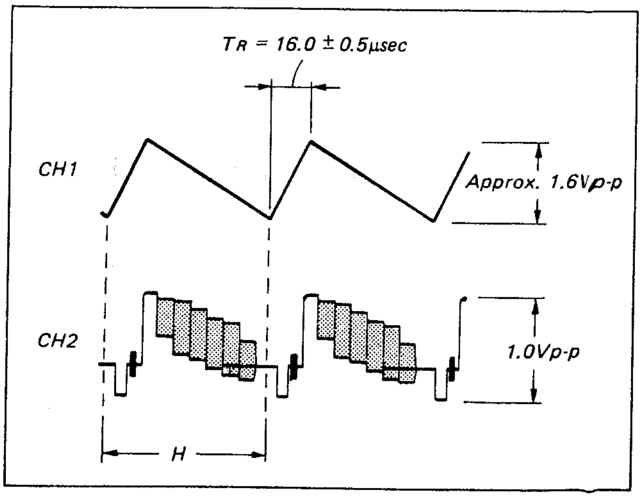


*Fig. 3-22 $f_H$ VCO Adjustment*

### 3-4-17. GCA GAIN Adjustment (VI-7 Board)

Mode: PLAYBACK PAUSE
Alignment tape: For operation checking (WR5-3CL) colour bar portion
Oscilloscope: TP108 (VIDEO OUT)

**[Adjustment Method]**

Adjust RV113 so that the burst signal is 290mVp-p.

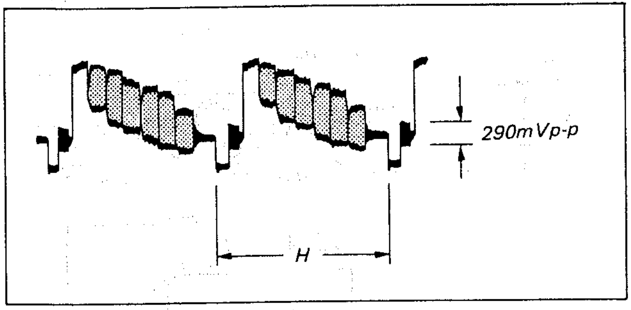


*Fig. 3-23 GCA GAIN Adjustment*

### 3-4-18. REC Y Recording Current Adjustment (AR-2 Board)

Mode: RECORD
Tape: MP type (Pin ③ of CN009 shall be approx. 5V dc.)
Input signals: None
Oscilloscope: TP102
Connection: Connect the following three places with jumper wires.
Pin ② of CN009 (REC C RF) – REG GND
Pin ⑥ of CN008 (REC ATF RF) – REG GND
Terminal of RV104 (REC AFM ADJ) on the R125 side – REG GND

**[Adjustment Method]**

Adjust to 160mVp-p with RV101.

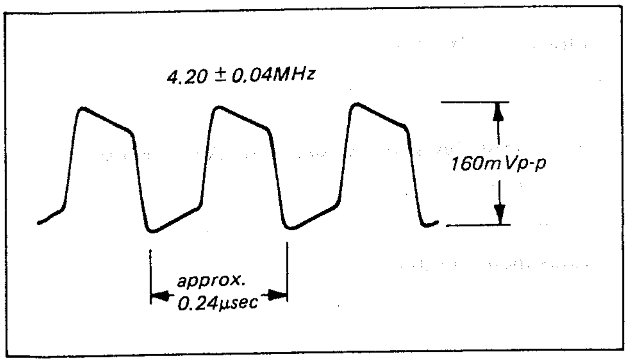


*Fig. 3-24 REC Y Recording Current Adjustment*

### 3-4-19. REC C Recording Current Adjustment (AR-2 Board)

Mode: RECORD
Tape: MP type (Pin ③ of CN009 shall be approx. 5V dc.)
Input signal: Colour bar
Oscilloscope: TP102 Do not use a 10:1 probe if the signal level is too small and is difficult to read. Connect directly using a 100Ω resistor as shown below.

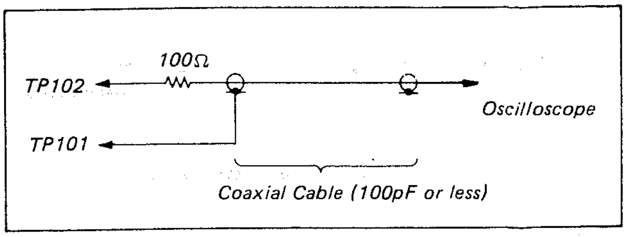


*Fig. 3-25*

Connection: Connect the following three locations using jumper wires.
Pin ⑥ of CN009 (REC Y RF) – REG GND
Pin ⑥ of CN008 (REC ATF RF) – REG GND
Terminal of RV104 (REC AFM ADJ) on the R125 side – REG GND

**[Adjustment Method]**

1) Rotate RV104 (REC AFM ADJ) to maximize the chroma signal level.
2) Adjust the red level to 30mVp-p with RV105 (REC C ADJ).
3) Make REC ATF and AFM recording current adjustments as required in 3-4-20 and 3-5-3, respectively.

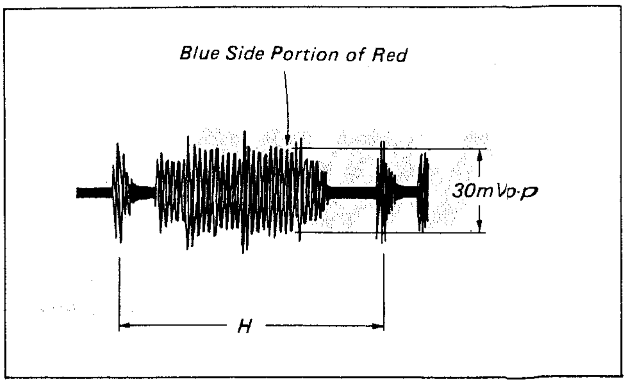


*Fig. 3-26 REC C Recording Current Adjustment*

### 3-4-20. REC ATF Recording Current Adjustment (AR-2 Board)

Mode: RECORD
Tape: MP type (Pin ③ of CN009 shall be approx. 5V dc.)
Input signals: Colour bar
Oscilloscope: TP102 Do not use a 10:1 probe if the signal level is too small and is difficult to read. Connect directly using a 100Ω resistor as shown below.

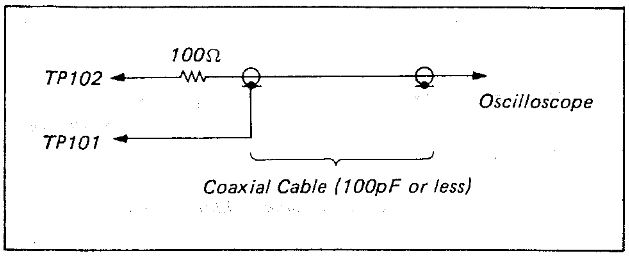

100Ω
TP102
TP101
Oscilloscope
Coaxial Cable (100pF or less)

*Fig. 3-27*

Connection: Connect the following three locations using jumper wires.
Pin ⑥ of CN009 (REC Y RF) – REG GND
Pin ② of CN009 (REC C RF) – REG GND
Terminal of RV104 (REC AFM ADJ) on R125 side – REG GND

**[Adjustment Method]**

1) Adjust RV104 (REC AFM ADJ) to the mechanical center.
2) Adjust to 6.0mVp-p with RV103 (REC ATF ADJ).
3) Perform steps mentioned in 3-5-3. AFM Recording Current Adjustment.

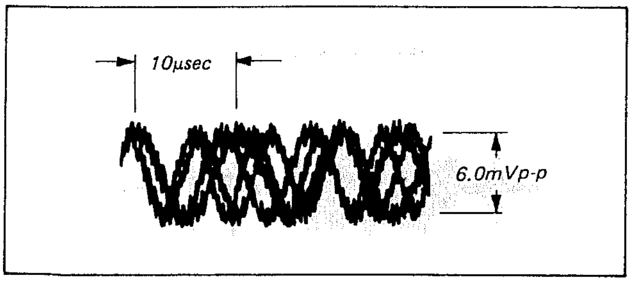


*Fig. 3-28 REC ATF Recording Current Adjustment*

## 3-5. AUDIO SYSTEM ADJUSTMENT

**Connection of audio measuring instruments**

Connect audio-system measuring instruments as shown below in addition to video system measuring instruments.

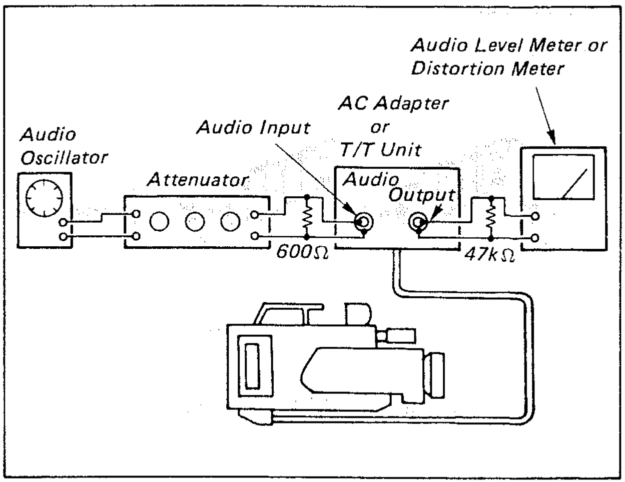

Audio Level Meter or Distortion Meter
AC Adapter or T/T Unit
Audio Oscillator
Audio Input
Attenuator
Audio Output
600Ω
47kΩ

*Fig. 3-29*

**[Adjustment Procedure]**

1) AFM carrier frequency adjustment
2) AFM deviation adjustment
3) AFM recording current adjustment
4) E-E output level check
5) Overall level characteristic check
6) Overall distortion factor check
7) Overall noise level check

### 3-5-1. AFM Carrier Frequency Adjustment (AR-2 Board)

Mode: RECORD
Audio input signals: None
Frequency counter: Pin ⑬ of IC401

**[Adjustment Method]**

Adjust to 1.500 ±0.002MHz with RV402.

### 3-5-2. AFM Deviation Adjustment (AR-2 Board)

Mode: PLAYBACK
Playback tape: For operation checking (WR5-3CL)

**[Adjustment Method]**

Adjust the audio output level to –6.5 ±0.2dBs with RV401.

### 3-5-3. AFM Recording Current Adjustment (AR-2 Board)

Mode: RECORD

Tape: MP type (Pin ③ of CN009 shall be approx. 5V dc.)

Audio input signals: None

Oscilloscope: TP102 Do not use a 10:1 probe if the signal level is too small and is difficult to read. Connect directly using a 100Ω resistor as shown below.

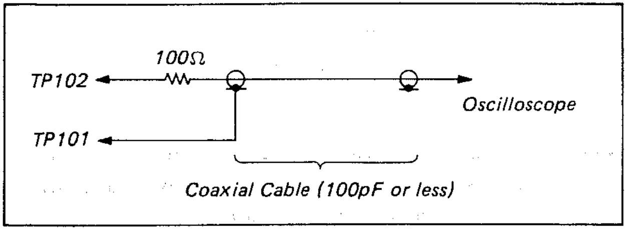


*Fig. 3-30*

Connection: Connect the following three locations using jumper wires.

Pin ⑥ of CN009 (REC Y RF) – REG GND
Pin ② of CN009 (REC C RF) – REG GND
Pin ⑥ of CN008 (REC ATF RF) – REG GND

[Adjustment Method]

Adjust to 7.0mVp-p with RV104.

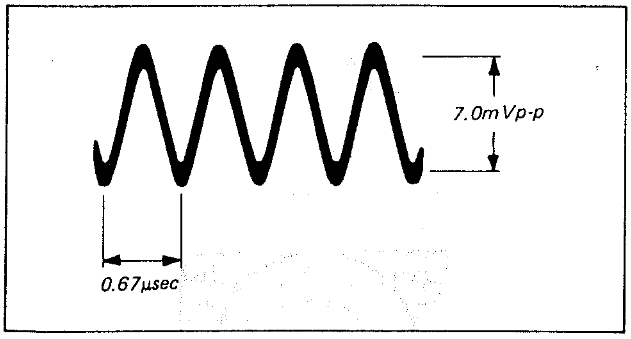


*Fig. 3-31 AFM Recording Current Adjustment*

### 3-5-4. E-E Output Level Check

Mode: E-E or RECORD

Audio input signals: 400Hz, –6dBs

[Checking Method]

The audio output level must be –6 ±2dBs.

### 3-5-5. Overall Level Characteristic Check

Mode: Self-recording and PLAYBACK (LP)

Tape: MP type

Audio input signals: 400Hz, –6dBs

[Checking Method]

1) Record.
2) Play back recorded portions.
3) The audio output level must be –6 ±3dBs.

### 3-5-6. Overall distortion Check

Mode: Self-recording and PLAYBACK (LP)

Tape: MP type

Audio input signals: 400Hz, –6dBs

[Checking Method]

1) Record.
2) Play back recorded portions.
3) The distortion must be less than 1.0% (0.5% when using a filter ohown below).

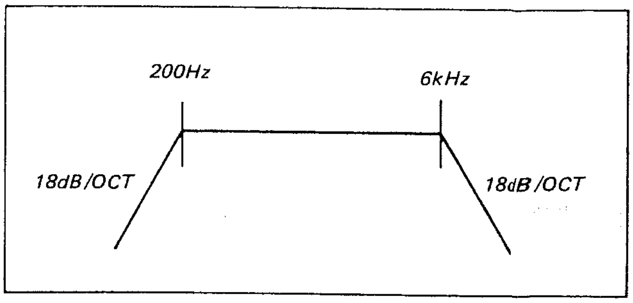


*Fig. 3-32 Distortion Measurement Filter*

### 3-5-7. Overall Noise Level Check

Mode: Self-recording and PLAYBACK (LP)

Tape: MP type

Audio input signals: None (Short audio input terminal)

[Checking Method]

1) Record.
2) Play back recorded portions.
3) The noise level must be less than –66dBs.

# 4. ELECTRONIC VIEW FINDER ADJUSTMENT

## 4-1. HORIZONTAL SLANT ADJUSTMENT

Alignment tape: For operation checking (WR5-3CL)

**[Adjustment Method]**

1) Play back the monoscope portions of the alignment tape.
2) Rotate the deflection coil while moving it closer to the fluorescent screen and fix the deflection coil so that pictures become horizontal.
   (Do not strap too strongly.)

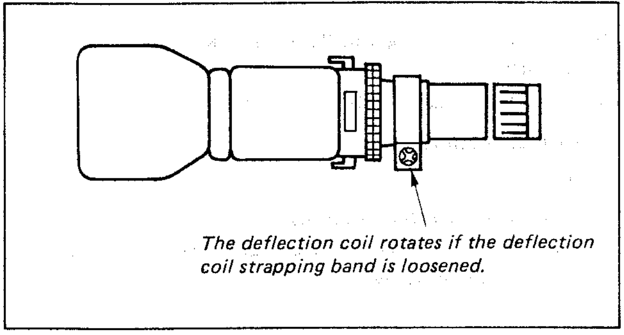

The deflection coil rotates if the deflection coil strapping band is loosened.

*Fig. 4-1*

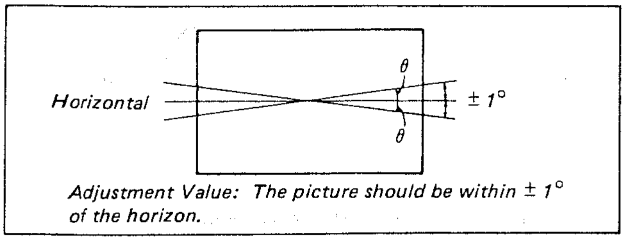

Horizontal
θ
θ
± 1°
Adjustment Value: The picture should be within ± 1° of the horizon.

*Fig. 4-2*

## 4-2. CENTERING ADJUSTMENT

Alignment tape: For operation checking (WR5-3CL)

**[Adjustment Method]**

1) Play back monoscope portions of the alignment tape.
2) Move the centering magnet to adjust to obtain pictures that are uniform horizontally and vertically.

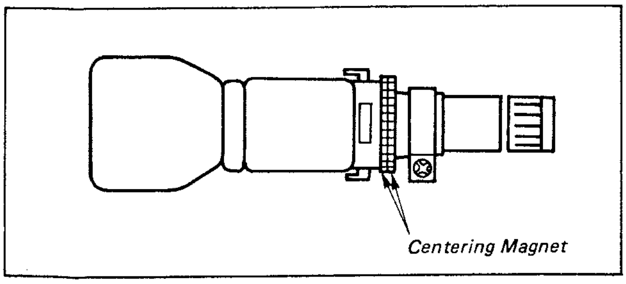

Centering Magnet

*Fig. 4-3*

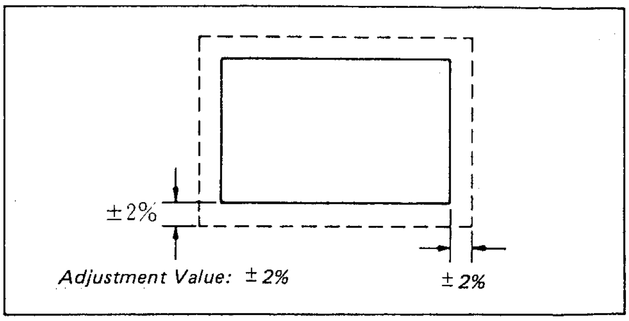

±2%
Adjustment Value: ± 2%
± 2%

*Fig. 4-4*

**Note:** The centering position changes affected by ground magnetism. Rotate 360° horizontally and adjust by the displacement center portion.

## 4-3. HORIZONTAL AMPLITUDE ADJUSTMENT (VF-4 Board)

Alignment tape: For operation checking (WR5-3CL)

**[Adjustment Method]**

1) Play back the monoscope portions of the alignmentt tape.
2) Rotate RV003 and align the top and bottom portions of the monoscope picture to the top and bottom edges of the screen.
3) Rotate RV005 to obtain the normal level of brightness.
4) Short or open the patterns (A to C) of the H-size adjusting capacitors (C028 to C030) sequentially to obtain horizontal overscanning of 8 ±2.5% (total of both left and right). (See Fig. 4-6.)

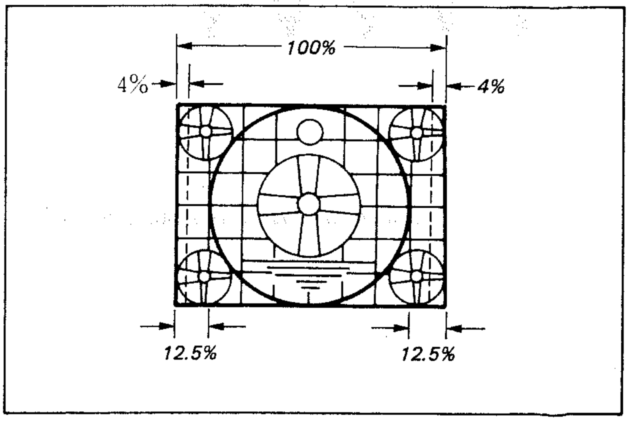

100%
4%
4%
12.5%
12.5%

*Fig. 4-5*

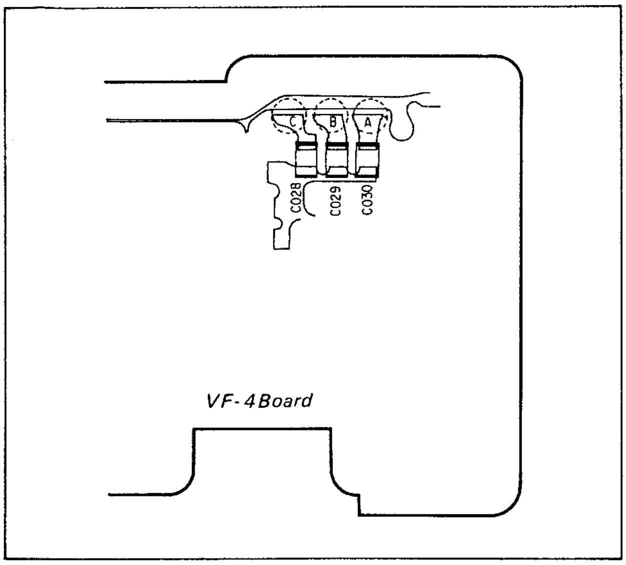


*Fig. 4-6*

### 4-4. VERTICAL AMPLITUDE ADJUSTMENT (VF-4 Board)

Alignment tape: For operation checking (WR5-3CL)

**[Adjustment Method]**

1) Play back the monoscope portions of the alignment tape.
2) Adjust RV003 to obtain vertical overscanning of 5 ±2.5% (total of both top and bottom).

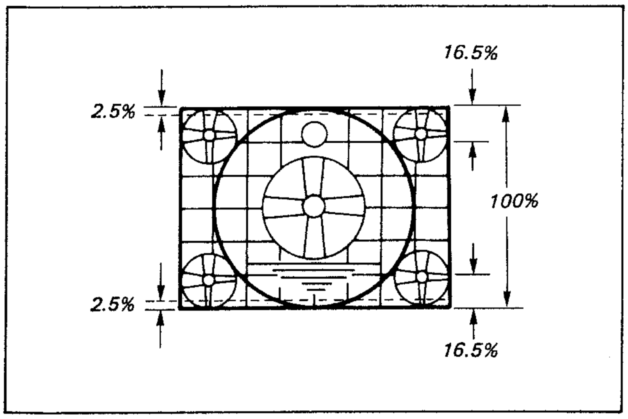


*Fig. 4-7*

### 4-5. HORIZONTAL OSCILLATING FREQUENCY ADJUSTMENT (VF-4 Board)

Preparation: Connect between Pin ⑨ of IC001 and GND using a jumper wire. Cover a white cap on the camera lens.

**[Adjustment Method]**

1) Turn on camera power.
2) Adjust RV001 to obtain pictures as shown in Fig. 4-8. (Flow of horizontal blanking portion (black lines) should be less than two lines.)

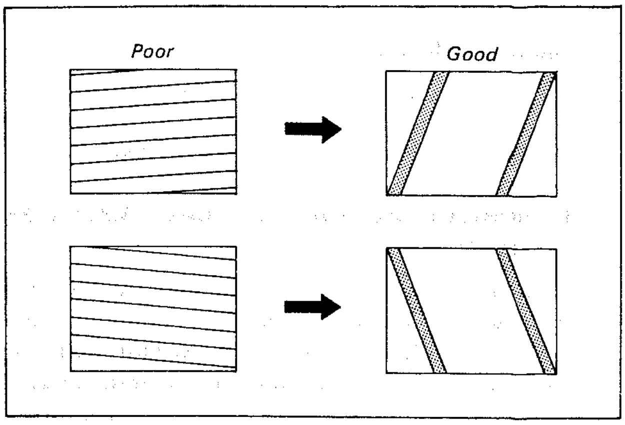


*Fig. 4-8*

### 4-6. VERTICAL OSCILLATING FREQUENCY ADJUSTMENT (VF-4 Board)

Preparation: Connect between Pin ⑨ of IC001 and GND using a jumper wire.

Equipment: A frequency counter or an oscilloscope

**[Adjustment Method]**

1) Connect the frequency counter or oscilloscope to the − side (DV1 terminal) of C015.
2) Adjust the frequency to 42 ±1Hz (23.8 ±0.6msec) with RV002.

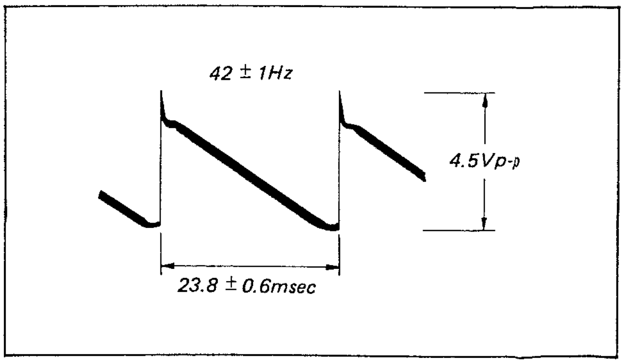


*Fig. 4-9*

### 4-7. BRIGHTNESS AND CONTRAST ADJUSTMENT (VF-4 board)

Alignment tape: For operation checking (WR5-3CL)

**[Adjustment Method]**

1) Play back the monoscope portions of the alignment tape.
2) Adjust RV004 and RV005 alternately until light and shade of the gray scale is indicated correctly.
(The light portion should not be so bright that the cross hatch inside the monoscope circle blooms. The shade portion should not be so dark that the darkest and second darkest portions of the gray scale cannot be recognized.)

## 4-8. FOCUS ADJUSTMENT (VF-4 Board)

Alignment tape: For operation checking (WR5-3CL)

**[Adjustment Method]**

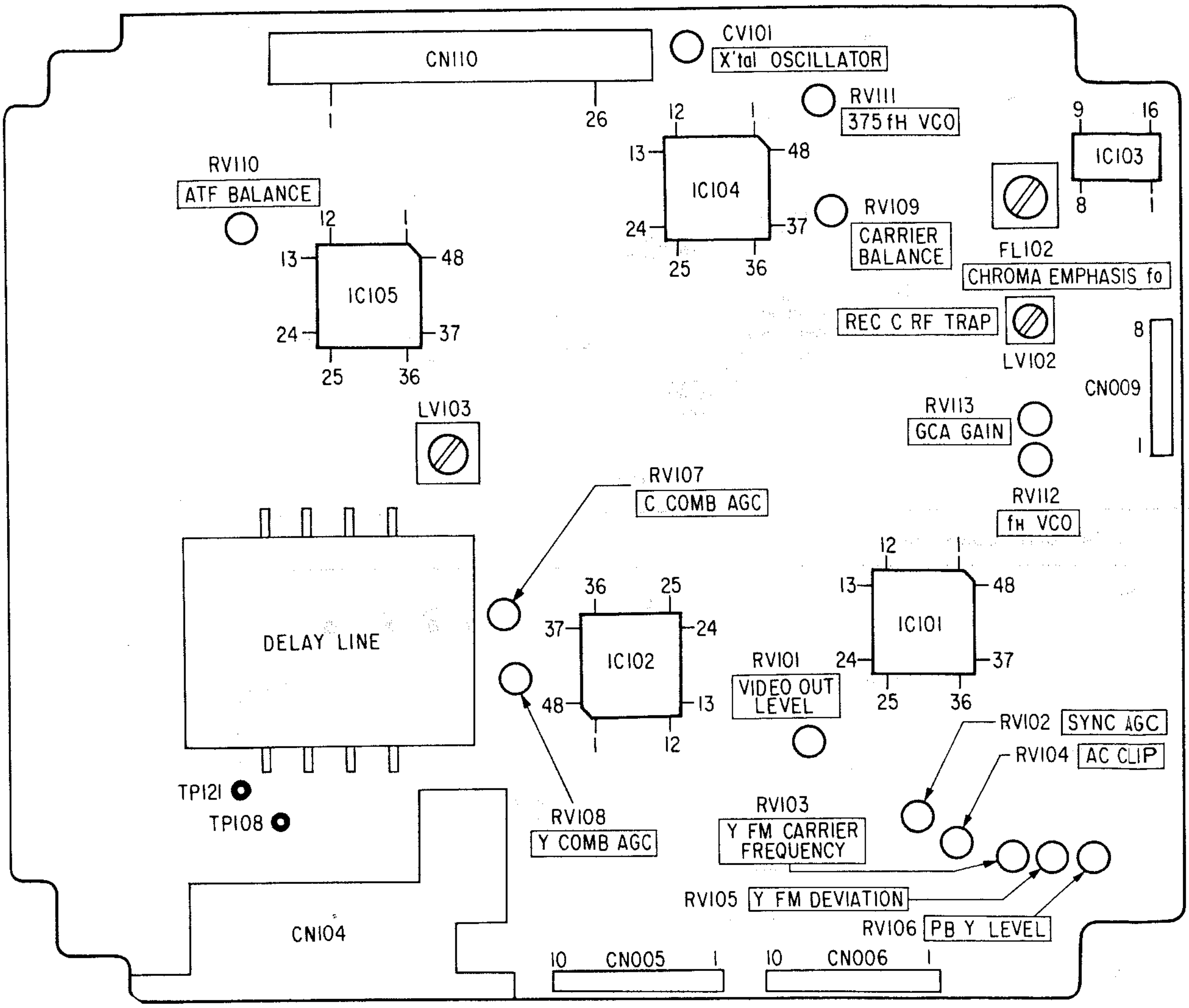
1) Play back the monoscope portions of the alignment tape.
2) Adjust to the best focus point with RV006.

## 4-9. HORIZONTAL AND VERTICAL AMPLITUDE CHECKING

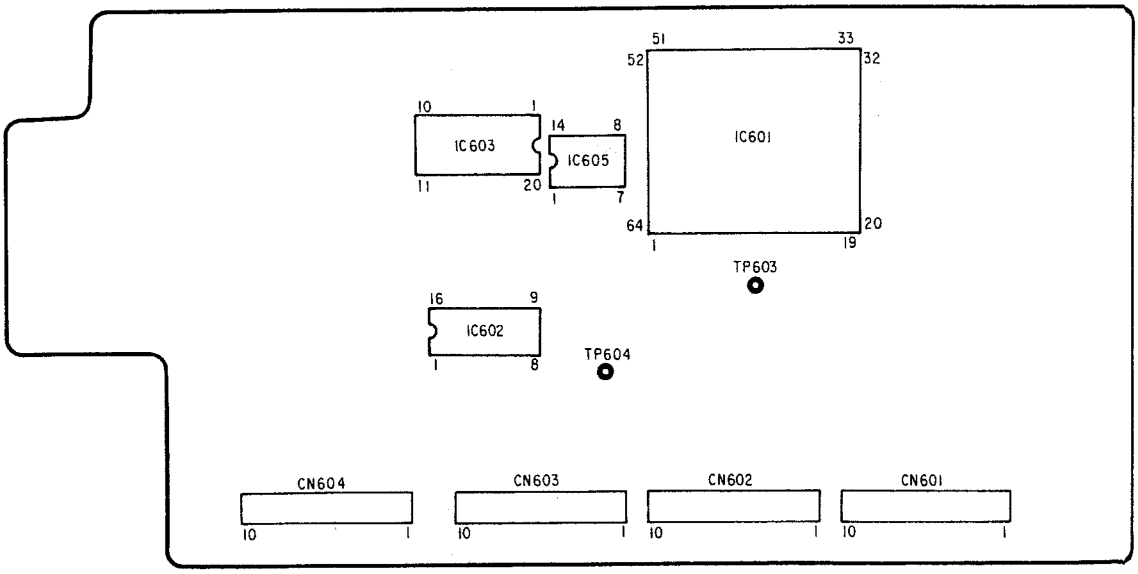
The parameters given in 4-3. Horizontal Amplitude Adjustment and 4-4. Vertical Amplitude Adjustment must be within the standard values. If not, readjust. Perform the steps required in 4-7 Brightness and Contrast Adjustment and 4-8 Focus Adjustment as well when making horizontal and vertical amplitude adjustment.

## 5. RV AND TP LOCATION

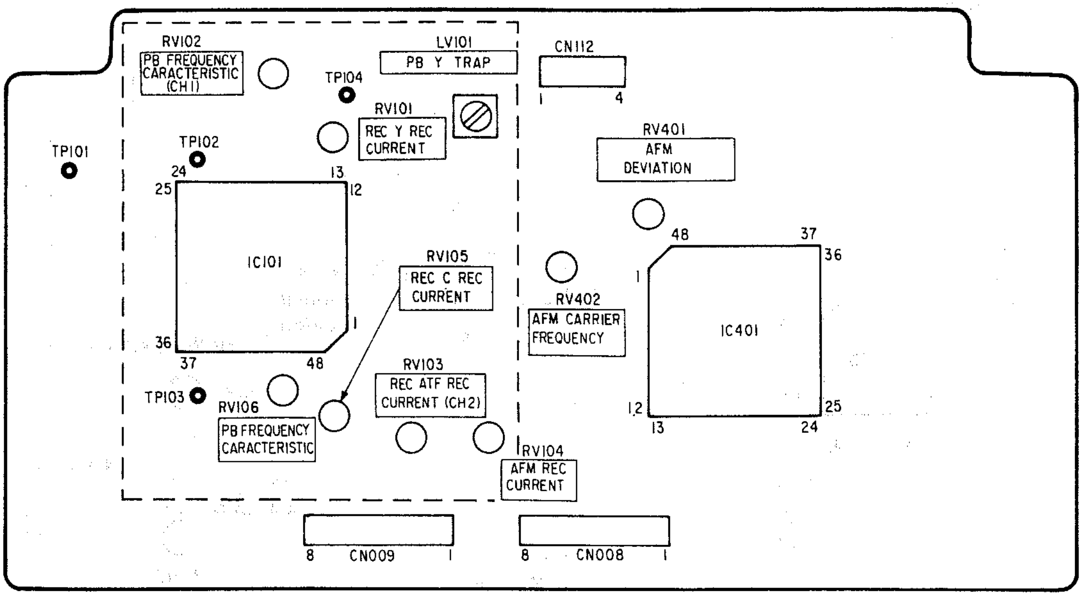
### VI-7 Board (Component Side)


CN110
1
26
CV101
X'tal OSCILLATOR
RV111
375fH VCO
12
1
13
48
IC104
24
37
25
36
RV109
CARRIER BALANCE
9
16
IC103
8
1
FL102
CHROMA EMPHASIS fo
REC C RF TRAP
LV102
8
CN009
1
RV110
ATF BALANCE
12
1
13
48
IC105
24
37
25
36
LV103
RV113
GCA GAIN
RV112
fH VCO
RV107
C COMB AGC
DELAY LINE
36
25
37
24
IC102
48
13
1
12
12
1
13
48
IC101
24
37
25
36
RV101
VIDEO OUT LEVEL
RV102
SYNC AGC
RV104
AC CLIP
TP121
TP108
RV108
Y COMB AGC
RV103
Y FM CARRIER FREQUENCY
RV105
Y FM DEVIATION
RV106
PB Y LEVEL
CN104
10
CN005
1
10
CN006
1

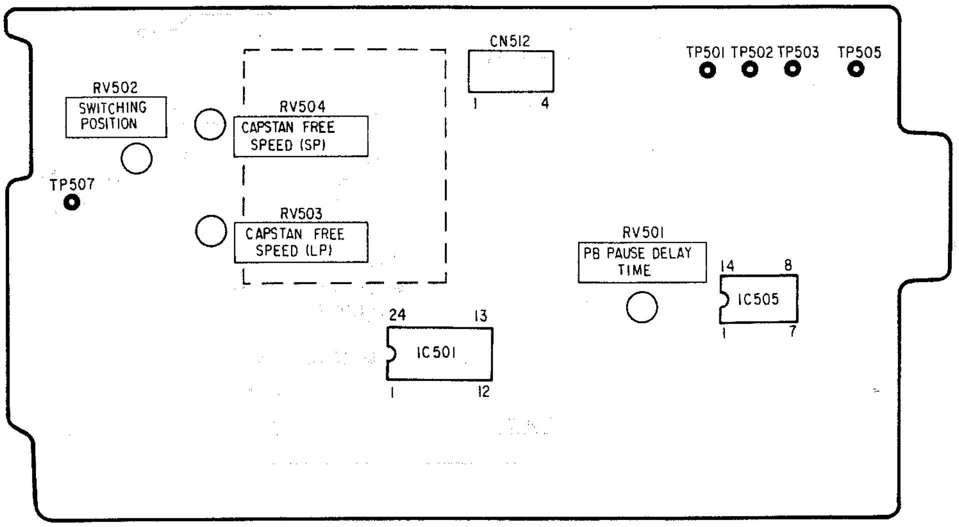
### SK-8 Board (Solder Side)


51
33
52
32
IC601
64
20
1
19
10
1
IC603
11
20
14
8
IC605
1
7
TP603
16
9
IC602
1
8
TP604
CN604
10
1
CN603
10
1
CN602
10
1
CN601
10
1

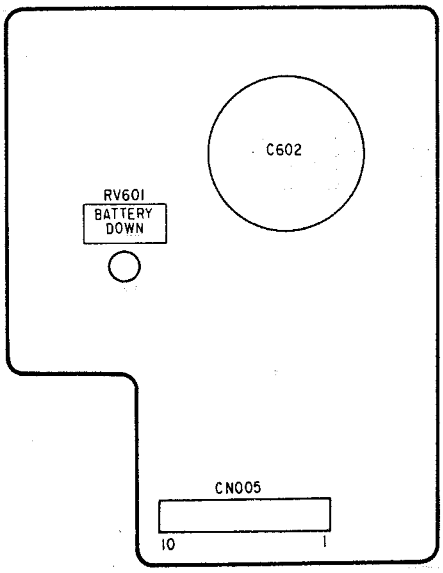
## AR-2 Board (Component Side)


RV102
PB FREQUENCY CARACTERISTIC (CH1)
LV101
PB Y TRAP
CN112
1
4
TP104
RV101
REC Y REC CURRENT
TP101
TP102
24
13
25
12
IC101
RV401
AFM DEVIATION
48
37
36
RV105
REC C REC CURRENT
RV402
AFM CARRIER FREQUENCY
1
36
37
48
IC401
TP103
RV106
PB FREQUENCY CARACTERISTIC
RV103
REC ATF REC CURRENT (CH2)
12
13
24
25
RV104
AFM REC CURRENT
8
CN009
1
8
CN008
1

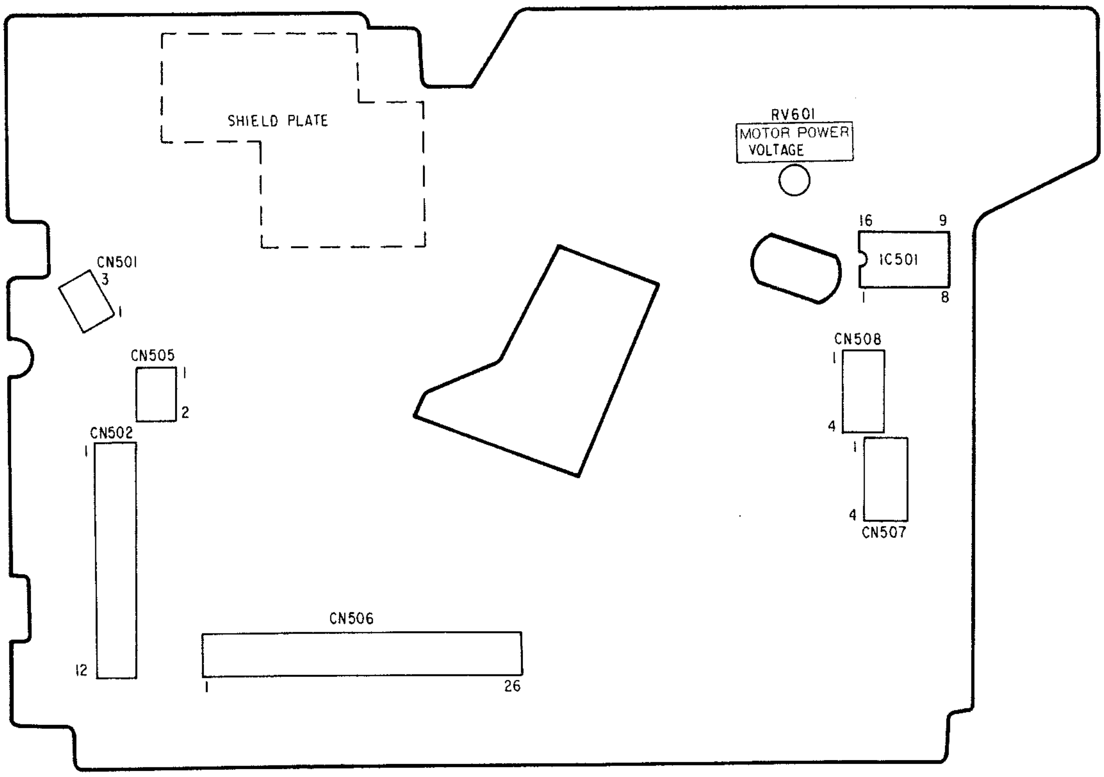
## SV-14 Board (Solder Side)


CN512
1
4
TP501
TP502
TP503
TP505
RV502
SWITCHING POSITION
RV504
CAPSTAN FREE SPEED (SP)
TP507
RV503
CAPSTAN FREE SPEED (LP)
RV501
PB PAUSE DELAY TIME
14
8
IC505
1
7
24
13
IC501
1
12

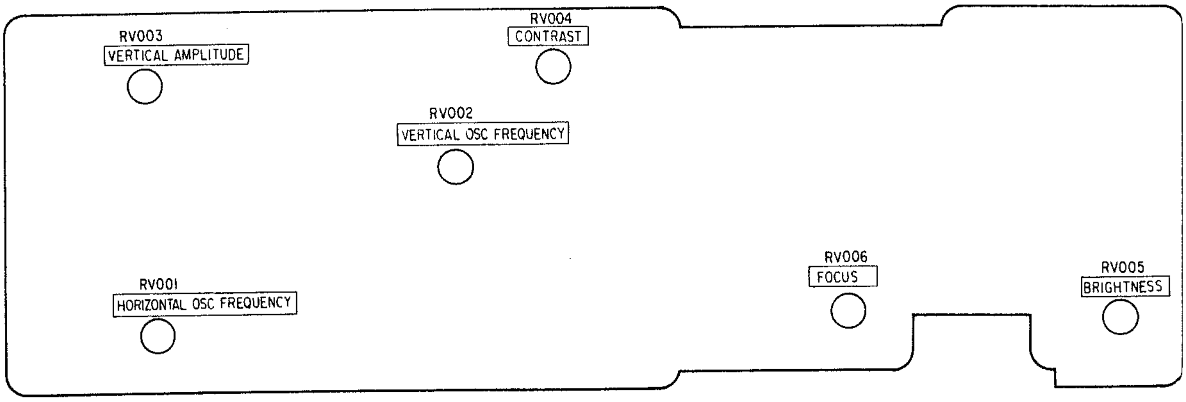
## HS-5 Board (Solder Side)


C602
RV601
BATTERY DOWN
CN005
10
1

## MC-8 Board (Solder Side)


SHIELD PLATE
RV601
MOTOR POWER VOLTAGE
16
9
IC501
1
8
CN501
3
1
CN505
1
2
CN502
1
12
CN508
1
4
1
4
CN507
CN506
1
26

## VF-4 Board (Component Side)


RV003
VERTICAL AMPLITUDE
RV004
CONTRAST
RV002
VERTICAL OSC FREQUENCY
RV006
FOCUS
RV005
BRIGHTNESS
RV001
HORIZONTAL OSC FREQUENCY

# CCD-V7AF-E

# SERVICE MANUAL

*AEP Model*
*UK Model*

**AF**
Auto Focus
**Video 8**

May, 1986

The circuits and mechanical structure of CCD-V7AF-E are slmost identical to those of CCD-V8AF-E. This manual contains only the difference. Refer to the CCD-V8AF-E Service Manual for related information not contained in this manual.

## SPECIFICATIONS

**System**

| | |
|---|---|
| Video recording system | Rotary two heads,<br>Helical scanning FM system |
| Audio recording system | Rotary head, FM system |
| Video signal | PAL colour, CCIR standards |
| Usable cassette | 8mm video format cassette |
| Tape speed | SP: Approx. 20.051 mm/sec.<br>LP: Approx. 10.058 mm/sec. |
| Recording or playback time | SP: 90 min. (P5–90)<br>LP: 180 min. (P5–90) |
| Fast forward time | Approx. 3 min. |
| Image device | CCD (Charge Coupled Device) |
| Viewfinder | Electric viewfinder<br>VF-235/236 (1" black and white) |
| Lens | Combined 6 × power zoom lens<br>f = 12–72 mm, F1.4 with macro<br>Filter diameter: 52 mm |
| Auto focus system | Infrared auto-focus |
| Colour temperature | Preset values: ☼ 5,800°K<br>💡 3,200°K<br>Auto: From the light at a tungsten lamp to the light on a slightly overcast day. |
| Minimum illumination | 22 lux (F1.4)<br>(2 footcandles) |
| Illumination range | 22 lux–100,000 lux<br>(2–9,294 footcandles) |
| Recommended illumination | More than 300 lux<br>(28 footcandles) |
| Aperture correction | Approx. ±1.5 |

**Input and output connector**

| | |
|---|---|
| MULTI CONNECTOR | 24-pin<br>Video output: 1 Vp-p, 75 ohms unbalanced, sync negative<br>Audio output: −6 dBs, output impedance less than 1 kilohms |
| Earpiece jack | Minijack, 8-ohm impedance |
| Remote jack | 5-pin connector |
| MIC jack | Minijack, −60 dBs, low impedance |

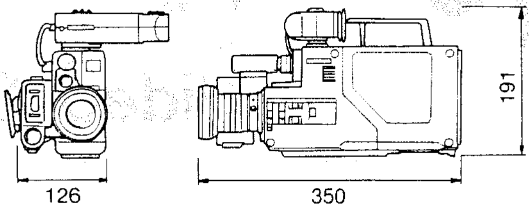
– Continued on next page –

**8 VIDEO CAMERA RECORDER**

**SONY**®

**General**

| | |
|---|---|
| Power requirements | MULTI connector 8.5 V<br>Battery compartment 6 V/8.5 V |
| Power consumption | 7.7W (camera recording) including the viewfinder |
| Installation | Horizontally, vertically |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | −20°C to +60°C (−4°F to +140°F) |
| Dimensions | Approx. 126 × 191 × 350 mm (w/h/d)<br>(5 × 7 5/8 × 13 7/8 in.) |



| | |
|---|---|
| Weight | Approx. 2.3 kg (5 lb 1 oz) excluding the battery and cassette<br>Approx. 2.6 kg (5 lb 13 oz) including the battery and cassette |
| Microphone | Electret condenser microphone, uni-directional monaural type |

**Accessories supplied**

Shoulder strap (1)
Sticker (1)

Design and specifications are subject to change without notice.

## CLOSE-UPS (Macro)

Use of the macro function allows the camera to approach the subject almost to the lens, so that even tiny objects can literally fill the screen for dramatic close-up effects. This allows you to discover aspects of the subject that would otherwise be "impossible".

1. Set the FOCUS switch to MAN.
2. To remove the lens hood, turn it in a counterclockwise direction.
3. While keeping the MACRO set button pressed, turn the zoom lever to the MACRO position.
4. Select the subject size in the scene by changing the distance between the subject and lens.
   The recorder can move to a subject as close as 6 mm (7/32 in.) from the lens surface.
5. Focus by turning the manual zoom lever.

**Notes on macro shooting**

● When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.

● Zooming is not possible during macro recording. To change the size of the subject, move the lens closer or further away from it.

● Auto focusing does not function during macro recording.

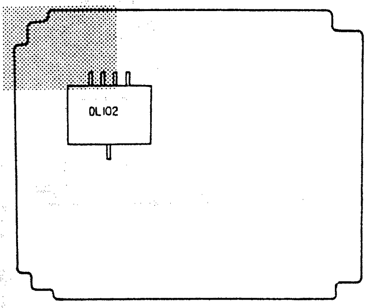
There is a partial difference in the circuits of both VI-7 board and AR-2 board between those of CCD-V7AF-E and CCD-V8AF-E.

## SECTION 4
## SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

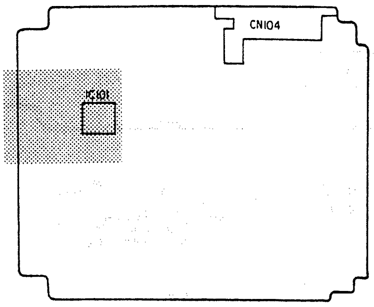
### VI-7 PRINTED WIRING BOARD

There are no C133, R289 and pins ⑩ and ㉒ of CN104 provided with the circuit on the VI-7 board of CCD-V7AF-E against that of CCD-V8AF-E.

**VI-7 BOARD (SOLDER SIDE)**



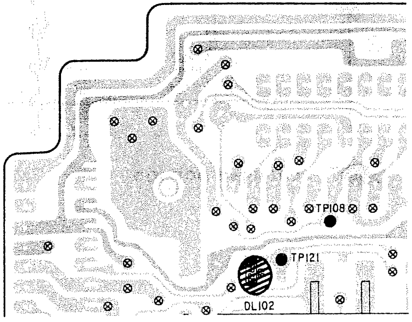
**VI-7 BOARD (COMPONENT SIDE)**



CN104
IC101

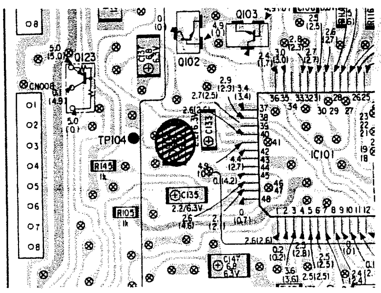
**(Page 104)**

VI-7 BOARD (SOLDER SIDE)



TP108
TP121
DL102

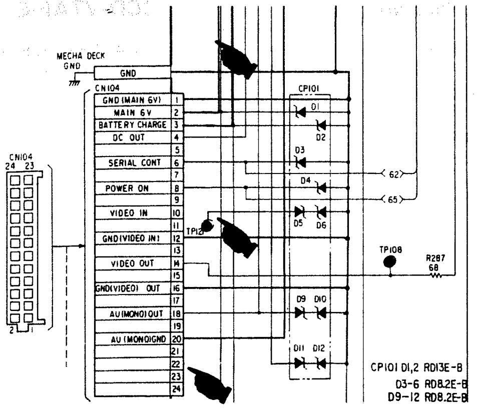
**(Page 105)**



Q103
Q123
Q102
CN008
TP104
R145
R105
C133
C135
2.2/6.3V
C147
IC101

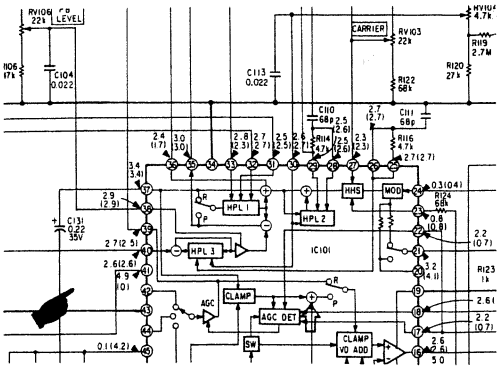
▨ : no mount

### VI-7 SCHEMATIC DIAGRAM
**(Page 110 I-11)**



MECHA DECK GND
GND
CN104
GND (MAIN 6V)
MAIN 6V
BATTERY CHARGE
DC OUT
SERIAL CONT
POWER ON
VIDEO IN
GND(VIDEO IN)
VIDEO OUT
GND(VIDEO) OUT
AU(MONO)OUT
AU (MONO)GND
CN104 24 23
CP101
D1
D2
D3
D4
D5
D6
D9
D10
D11
D12
62
65
TP12
TP108
R287 68
CP101 D1,2 RD13E-B
D3-6 RD8.2E-B
D9-12 RD8.2E-B

**(Page 111 D-13)** ☛ :changed portion



RV106 FD LEVEL
C104 0.022
C113 0.022
CARRIER
RV103 22k
R119 2.7M
R120 27k
R122 68k
C110 68p
C111 68p
R116 4.7k
R114 47k
HPL 1
HPL 2
HPL 3
HHS
MOD
R124 68k
IC101
CLAMP
AGC
AGC DET
SW
CLAMP VD ADD
C131 0.22 35V
R123 1k

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

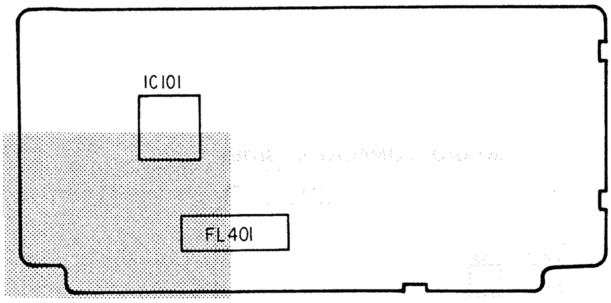
### DEFERENCE LIST

| Ref.No. and Description | CCD-V8AF-E Part No. | CCD-V7AF-E Part No. |
|---|---|---|
| VI-7 BOARD, COMPLETE | *A-7060-260-A | *A-7060-526-A |
| C133 TANTAL, CHIP 2.2MF 10% 6.3V | 1-135-099-00 | ——— |
| CN104 SOCKET, CONNECTOR | 1-562-582-11<br>[ Pin ⑩ : VIDEO IN<br>Pin ㉒ : AU (MONO) IN ] | 1-563-415-11<br>[ Pin ⑩ : NC<br>Pin ㉒ : NC ] |
| R289 METAL CHIP 39 5% 1/10W | 1-216-015-00 | ——— |

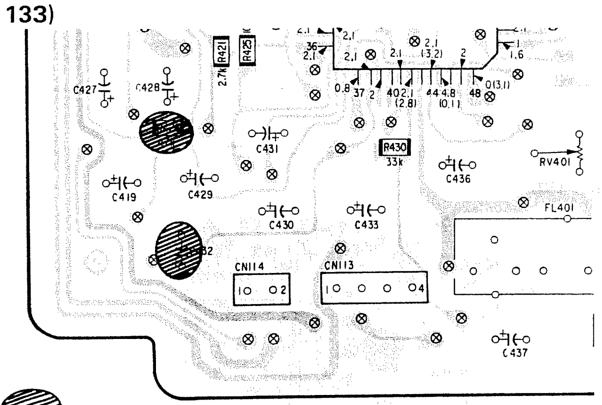
## AR-2 PRINTED WIRING BOARD

There are no C432 and R426 provided with the circuit on the AR-2 board of CCD-V7AF-E against that of CCD-V8AF-E.

### AR-2 BOARD (COMPONENT SIDE)


IC101
FL401

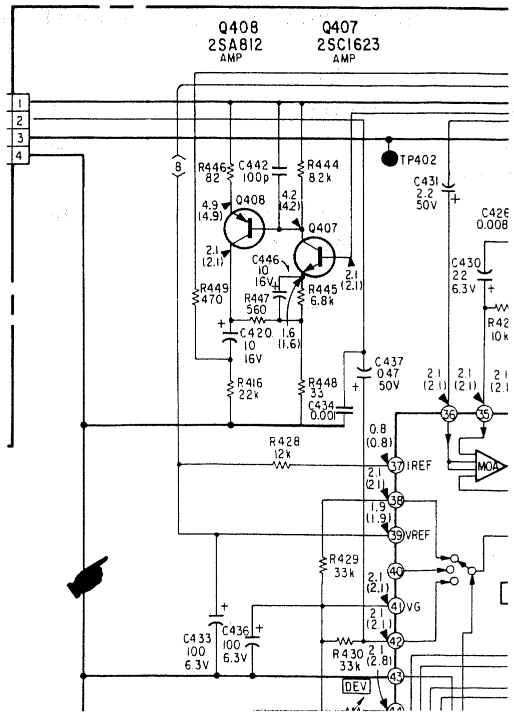
(P 133)


R421
R425
2.7k
C427
C428
C431
C419
C429
C430
C433
R430
33k
C436
RV401
FL401
CN114
CN113
C437

▨ : no mount

## AR-2 SCHEMATIC DIAGRAMS

(P136 D-12)


Q408
2SA812
AMP
Q407
2SC1623
AMP
TP402
R446 82
C442 100p
R444 8.2k
Q408
Q407
C446 10 16V
R447 560
R445 6.8k
R449 470
C420 10 16V
R416 22k
R448 33
C434 0.001
C437 0.47 50V
C431 2.2 50V
C430 22 6.3V
R428 12k
IREF
VREF
VG
R429 33k
R430 33k
DEV
C433 100 6.3V
C436 100 6.3V
MOA

☛ : changed portion

### DEFERENCE LIST

| Ref.No. and Description | CCD-V8AF-E Part.No. | CCD-V7AF-E Part.No. |
|---|---|---|
| AR-2 BOARD, COMPLETE | *A-7060-245-A | *A-7060-528-A |
| C432 ELECT 0.47MF 20% 50V | 1-124-253-00 | ———— |
| R426 METAL CHIP 47K 5% 1/10W | 1-216-089-00 | ———— |

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

## 5-1 COVER ASSEMBLY (Page 145)

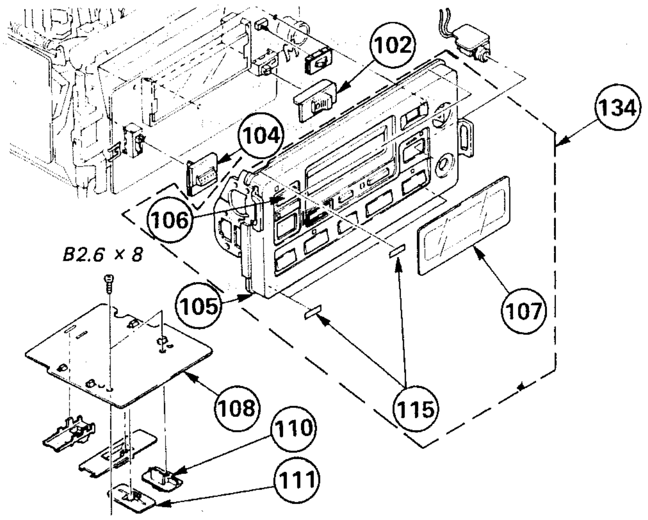
| No. | Description | CCD-V8AF-E Part No. | CCD-V7AF-E Part No. | Remark |
|---|---|---|---|---|
| 1 | LID ASSY, CASSETTE | X-3686-674-1 | X-3686-776-1 | 2 |
| 3 | LABEL, MODEL NUMBER (AEP, UK MODEL) | *3-693-287-01 | —— | |
| | LABEL, MODEL NUMBER (W.G. MODEL) | *3-693-286-01 | —— | |
| | LABEL, MODEL NUMBER (AEP MODEL) | —— | *3-699-571-01 | |
| | LABEL, MODEL NUMBER (UK MODEL) | —— | *3-699-572-01 | |
| 5 | COVER ASSY, CAMERA HEAD | X-3686-684-1 | —— | 6 |
| 6 | FOOT, RUBBER | 3-688-931-01 | —— | |

## 5-2 CABINET (LEFT) ASSEMBLY (Page 146)

| No. | Description | CCD-V8AF-E Part No. | CCD-V7AF-E Part No. | Remark |
|---|---|---|---|---|
| 56 | CABINET (LEFT) SUB ASSY | X-3686-651-1 | X-3686-771-1 | 51, 52, 57, 58<br>64, 66, 71 |

## 5-3 CONTROL PANEL, CABINET (UPPER, RIGHT) ASSEMBLY (Page 147)

| No. | Description | CCD-V8AF-E Part No. | CCD-V7AF-E Part No. | Remark |
|---|---|---|---|---|
| 105 | PANEL, CONTROL | 3-686-981-21 | —— | |
| 112 | CABINET (RIGHT) SUB ASSY | X-3686-666-1 | X-3686-770-1 | 113 |
| 134 | KEY ASSY, VTR | —— | X-3686-775-1 | |



## 5-4 MAIN BOARD ASSEMBLY (Page 148)

| No. | Description | CCD-V8AF-E Part No. | CCD-V7AF-E Part No. | Remark |
|---|---|---|---|---|
| 164 | AR-2 BOARD, COMPLETE | *A-7060-245-A | *A-7060-528-A | |
| 166 | VI-7 BOARD, COMPLETE | *A-7060-260-A | *A-7060-526-A | 168, 169 |

## 5-10 CAMERA BLOCK ASSEMBLY (Page 154)

| No. | Description | CCD-V8AF-E Part No. | CCD-V7AF-E Part No. | Remark |
|---|---|---|---|---|
| 451 | CAP ASSY, HOOD | *X-3686-677-1 | *X-3686-808-1 | 455–458, 460, 462, 464, 465 |
| 454 | LENS, ZOOM | 1-547-183-11 | 1-547-208-11 | |
| 457 | ZOOM RING UNIT | 3-707-226-01 | 3-707-267-01 | |

## 5-11 EVF ASSEMBLY (Page 155)

| No. | Description | CCD-V8AF-E Part No. | CCD-V7AF-E Part No. | Remark |
|---|---|---|---|---|
| 501 | EVF (VF-206) (AEP, W.G. MODEL) | A-7019-007-A | ———— | 502 - 523 |
| | EVF (VF-208) (UK MODEL) | A-7019-001-A | ———— | 503 - 523 |
| | EVF (VF-235) (AEP MODEL) | ———— | A-7019-036-A | 502 - 523 |
| | EVF (VF-236) (UK MODEL) | ———— | A-7019-037-A | 502 - 523 |
| 516 | CABINET (LOWER) ASSY, EVF | X-3686-662-1 | X-3686-769-1 | 521, 523 |
| 517 | LABEL, MODEL NUMBER, EVF (AEP, W.G. MODEL) | *3-688-962-01 | ———— | |
| | LABEL, MODEL NUMBER, EVF (UK MODEL) | *3-693-251-01 | *3-699-575-01 | |
| | LABEL, MODEL NUMBER, EVF (AEP MODEL) | ———— | *3-699-574-01 | |

## ACCESSORIES AND PACKING MATERIALS (Page 185)

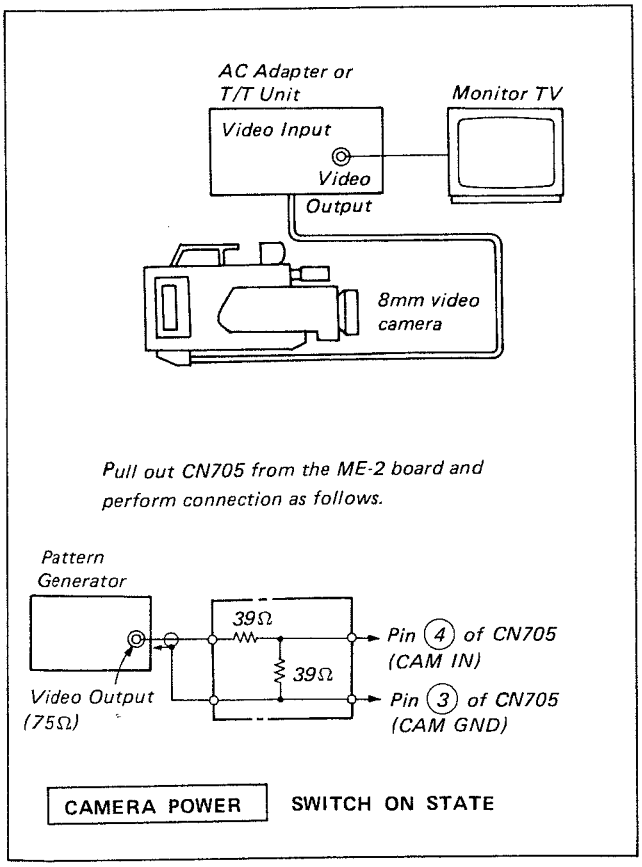
| No. | Description | CCD-V8AF-E Part No. | CCD-V7AF-E Part No. | |
|---|---|---|---|---|
| | CUSHION (UPPER) | *3-696-031-01 | *3-699-604-01 | |
| | CUSHION (LOWER) | *3-696-032-01 | *3-699-605-01 | |
| | MANUAL, INSTRUCTION | 3-760-728-11 | 3-765-311-11 | |
| | MANUAL, INSTRUCTION (AEP, W.G. MODEL) | 3-760-728-41 | ———— | |
| | MANUAL, INSTRUCTION (AEP, W.G. MODEL) | 3-760-728-51 | ———— | |
| | MANUAL, INSTRUCTION (AEP MODEL) | ———— | 3-765-311-41 (FRENCH, GERMAN, DUTCH) | |
| | | ———— | 3-765-311-51 (SPANISH, SWEDISH, ITALIAN) | |

# SECTION 7
# ADJUSTMENTS

## 3. VIDEO SECTION ADJUSTMENT

### [Equipment Connection]

Unless otherwise specified, adjustment is made by connecting the measuring instruments as shown below.


AC Adapter or
T/T Unit
Monitor TV
Video Input
Video
Output
8mm video
camera
Pattern
Generator
39Ω
39Ω
Video Output
(75Ω)
Pin ④ of CN705
(CAM IN)
Pin ③ of CN705
(CAM GND)

*Pull out CN705 from the ME-2 board and perform connection as follows.*

**CAMERA POWER** SWITCH ON STATE

*Fig. 3-1*

### Setting up during adjustment

Video signals output by an pattern generator are used as adjustment signals when adjusting the video section, and these video output signals should be within the required standard. Connect an oscilloscope to TP104 (CAM IN) on the VI-7 Board. Check that the amplitudes of video signal SYNC signals, of picture portions, and of burst signals are flat at approximately 0.3, 0.7, and 0.3V, respectively, and that the level ratio of the burst signals and "red" signals are 0.30:0.66.

Fig. 3-2 shows video signals (colour bars) used in adjusting the video section.

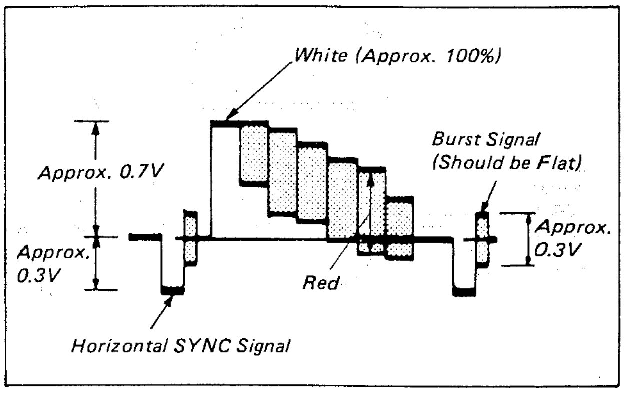
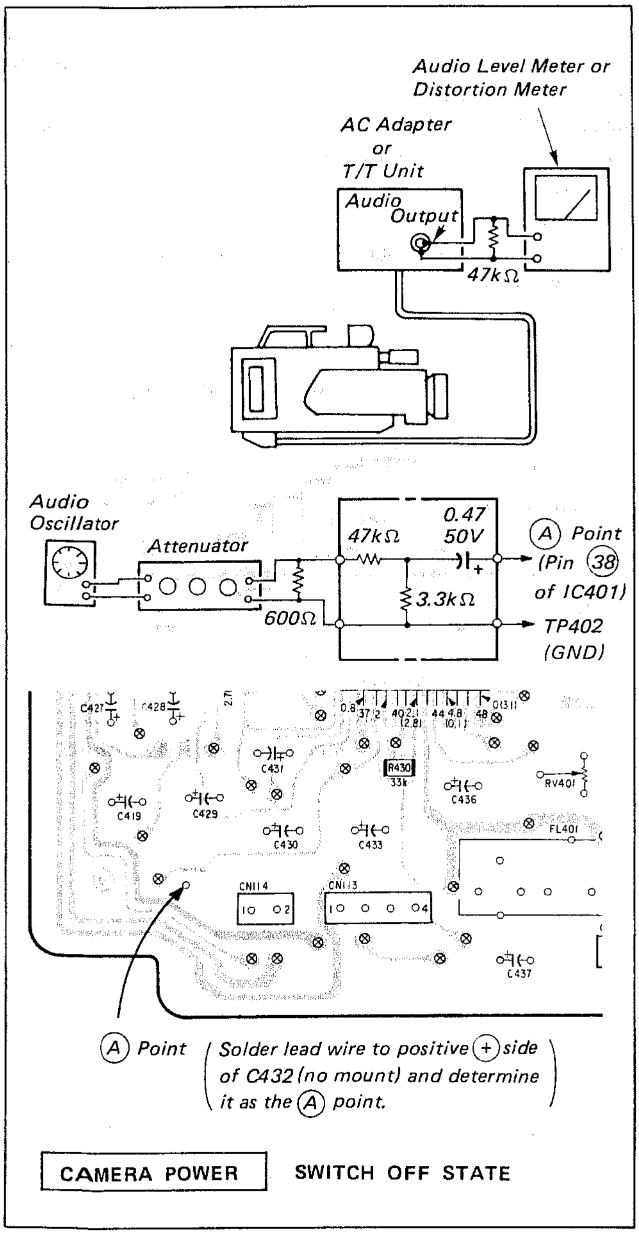

White (Approx. 100%)
Burst Signal
(Should be Flat)
Approx. 0.7V
Approx.
0.3V
Approx.
0.3V
Red
Horizontal SYNC Signal

*Fig. 3-2 Pattern Generator Colour Bar Signals*

## 3-5. AUDIO SYSTEM ADJUSTMENT

**Connection of audio measuring instruments**

Connect audio-system measuring instruments as shown below in addition to video system measuring instruments.


Audio Level Meter or Distortion Meter
AC Adapter or T/T Unit
Audio Output
47kΩ
Audio Oscillator
Attenuator
600Ω
47kΩ
0.47 50V
3.3kΩ
(A) Point (Pin ㊳ of IC401)
TP402 (GND)
C427
C428
C431
C419
C429
C430
C433
R430 33k
C436
RV401
FL401
CN114
CN113
C437
(A) Point

(A) Point (Solder lead wire to positive (+) side of C432 (no mount) and determine it as the (A) point.)

**CAMERA POWER** SWITCH OFF STATE

Fig. 3-29

# CCD-V8AF-E

**SONY**®
# SERVICE MANUAL

*AEP Model*
*UK Model*
*West Germany Model*

*September, 1986*

## SUPPLEMENT-1

Subject: Circuit modifications

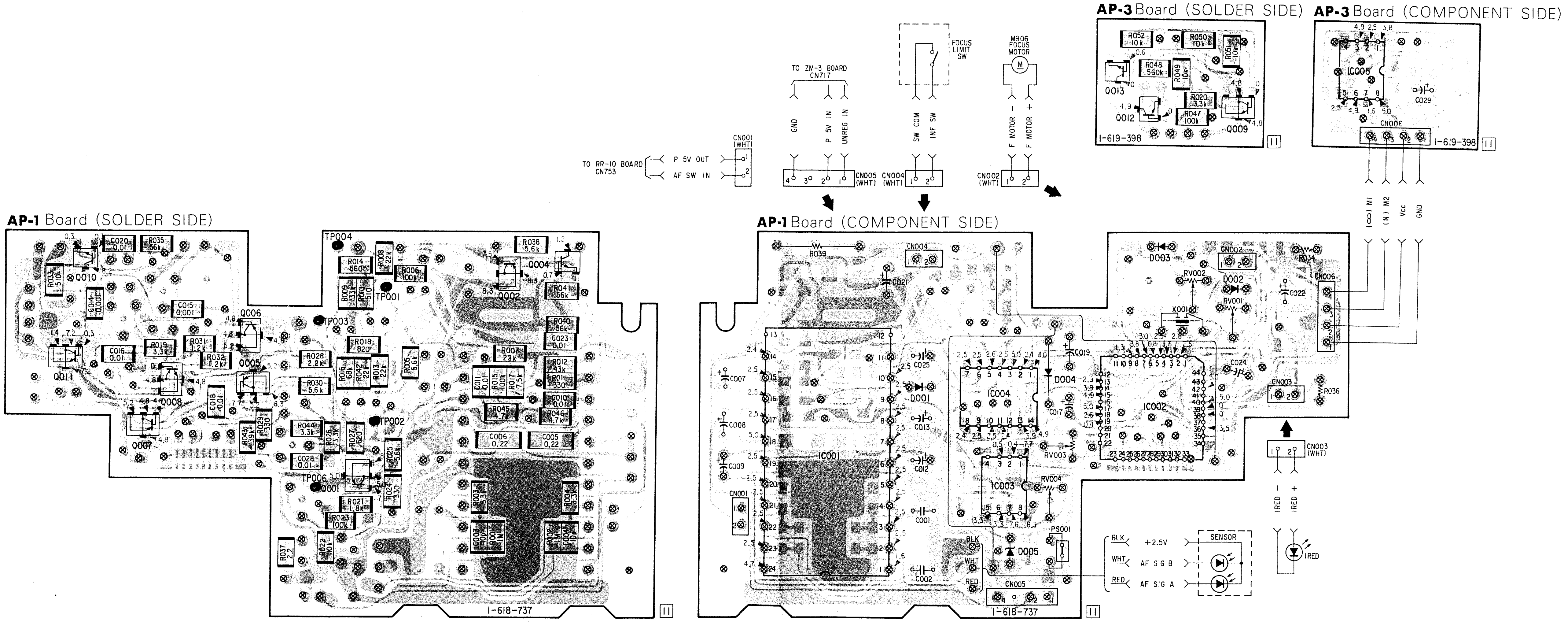
**This Service Manual is revised edition of Schematic Diagram, Printed Wiring Boards, Repair Parts List and Adjustment according to the changes in the following circuits.**

1) The autofocusing circuit, which consists of AZ-2 and PA-7 Boards has been changed to AP-1 and AP-3 Boards.

2) The HS-5 Board and the circuit for DC/DC converter (DR901) in this section have been made into one Board to become HD-7 Board.

## 4-2. AP-1, AP-3 (AUTO FOCUS PROCESS) PRINTED WIRING BOARDS

– Ref. No. AP-1, AP-3 Boards: 5,000 series –


AP-1 Board (SOLDER SIDE)
AP-1 Board (COMPONENT SIDE)
AP-3 Board (SOLDER SIDE)
AP-3 Board (COMPONENT SIDE)
1-618-737
1-619-398
TO RR-10 BOARD CN753
P 5V OUT
AF SW IN
CN001 (WHT)
TO ZM-3 BOARD CN717
GND
P 5V IN
UNREG IN
CN005 (WHT)
FOCUS LIMIT SW
SW COM
INF SW
CN004 (WHT)
M906 FOCUS MOTOR
F MOTOR –
F MOTOR +
CN002 (WHT)
(∞) M1
(N) M2
Vcc
GND
CN006
CN003 (WHT)
IRED –
IRED +
IRED
SENSOR
BLK
WHT
RED
+2.5V
AF SIG B
AF SIG A
IC001
IC002
IC003
IC004
IC005
Q001
Q002
Q004
Q005
Q006
Q007
Q008
Q009
Q010
Q011
Q012
Q013
D001
D002
D003
D004
D005
RV001
RV002
RV003
RV004
PS001
X001
TP001
TP002
TP003
TP004
TP006

When indicating parts by reference number,- please include the board name.

Caution:

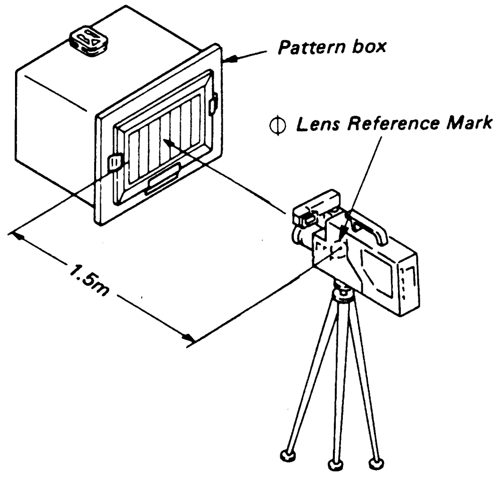
| | |
|---|---|
| Pattern face side: (Solder Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component Side) | Parts on the parts face side seen from the pattern face are indicated. |

- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : B+ pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.

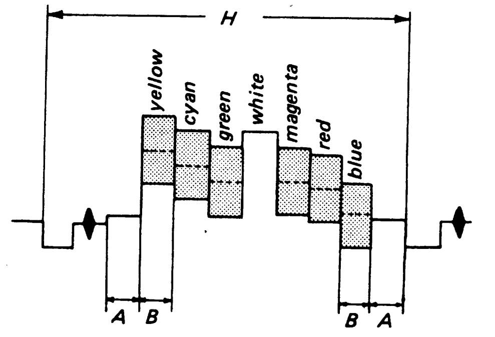
**Note:**

- Caution when replacing tip parts.
  New parts must be attached after removal of tip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the head.
- All resistors are in ohms, 1/10W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted.
  50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ▭ : Nonflammable resistor
- ——— : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  (1) Sample object: Pattern box color bars.
  (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

**1. Connection**


Pattern box
Lens Reference Mark
1.5m

**2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.**


H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A

A = B

*Fig. a Camera output waveform of TP711 on ME-2 board*

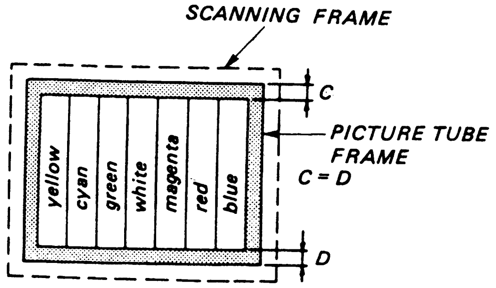
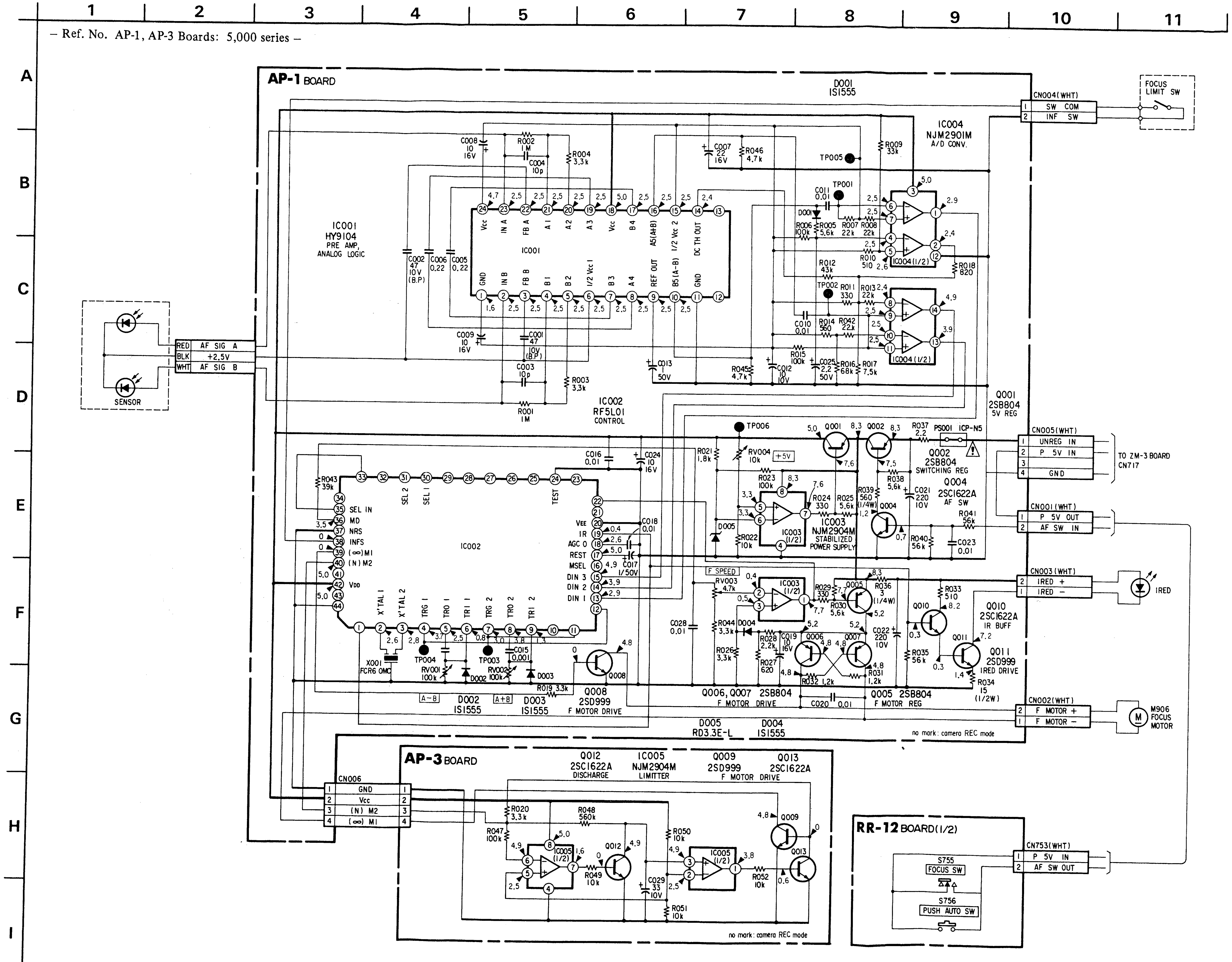

SCANNING FRAME
C
PICTURE TUBE FRAME
C = D
D
yellow
cyan
green
white
magenta
red
blue

*Fig. b Picture of TV monitor screen*

**AP-1, AP-3 (AUTO FOCUS PROCESS)** SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
– Ref. No. AP-1, AP-3 Boards: 5,000 series –
AP-1 BOARD
D001
1S1555
IC004
NJM2901M
A/D CONV.
CN004(WHT)
SW COM
INF SW
FOCUS LIMIT SW
IC001
HY9104
PRE AMP,
ANALOG LOGIC
IC002
RF5L01
CONTROL
SENSOR
RED AF SIG A
BLK +2.5V
WHT AF SIG B
Q001
2SB804
5V REG
Q002
2SB804
SWITCHING REG
Q004
2SC1622A
AF SW
IC003
NJM2904M
STABILIZED
POWER SUPPLY
PS001 ICP-N5
CN005(WHT)
UNREG IN
P 5V IN
GND
TO ZM-3 BOARD
CN717
CN001(WHT)
P 5V OUT
AF SW IN
CN003(WHT)
IRED +
IRED −
IRED
Q010
2SC1622A
IR BUFF
Q011
2SD999
IRED DRIVE
F SPEED
X001
FCR6 OMC
D002
1S1555
D003
1S1555
Q008
2SD999
F MOTOR DRIVE
Q006, Q007 2SB804
F MOTOR DRIVE
Q005 2SB804
F MOTOR REG
D005
RD3.3E-L
D004
1S1555
CN002(WHT)
F MOTOR +
F MOTOR −
M906
FOCUS MOTOR
no mark: camera REC mode
AP-3 BOARD
CN006
GND
Vcc
(N) M2
(∞) MI
Q012
2SC1622A
DISCHARGE
IC005
NJM2904M
LIMITTER
Q009
2SD999
Q013
2SC1622A
F MOTOR DRIVE
no mark: camera REC mode
RR-12 BOARD(1/2)
CN753(WHT)
P 5V IN
AF SW OUT
S755
FOCUS SW
S756
PUSH AUTO SW

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

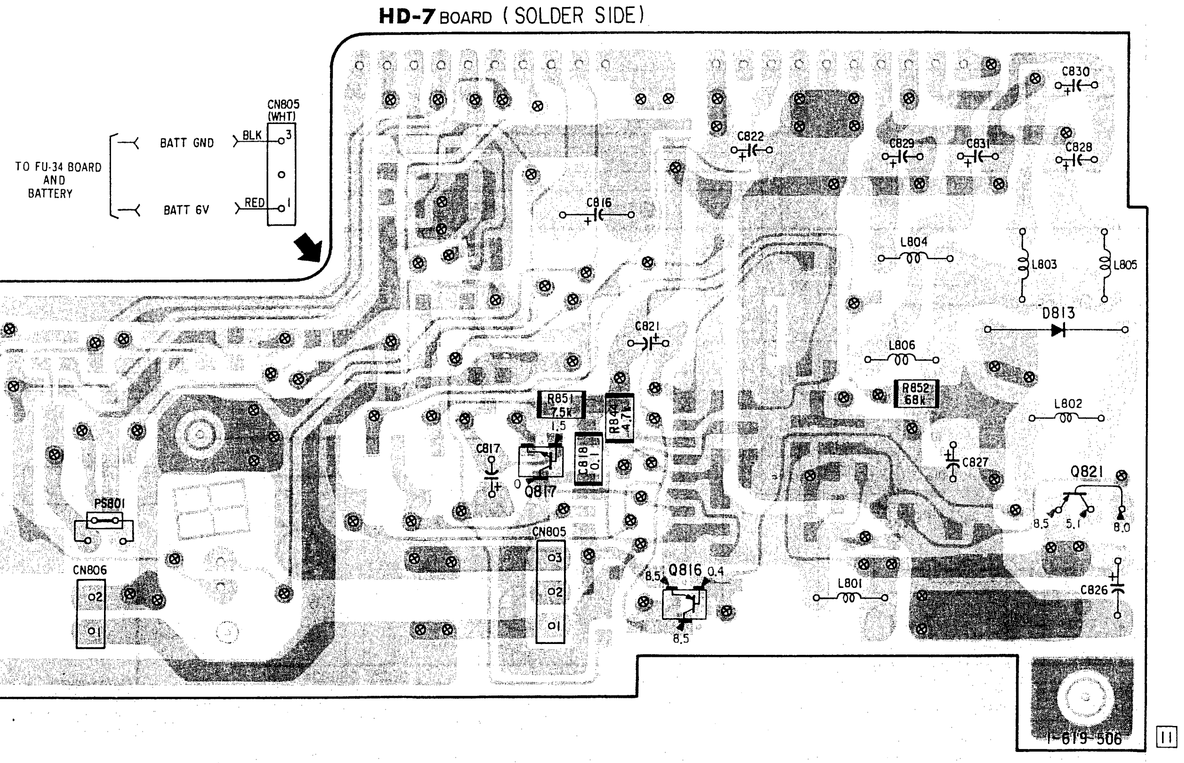
When indicating parts by reference number, please include the board name.

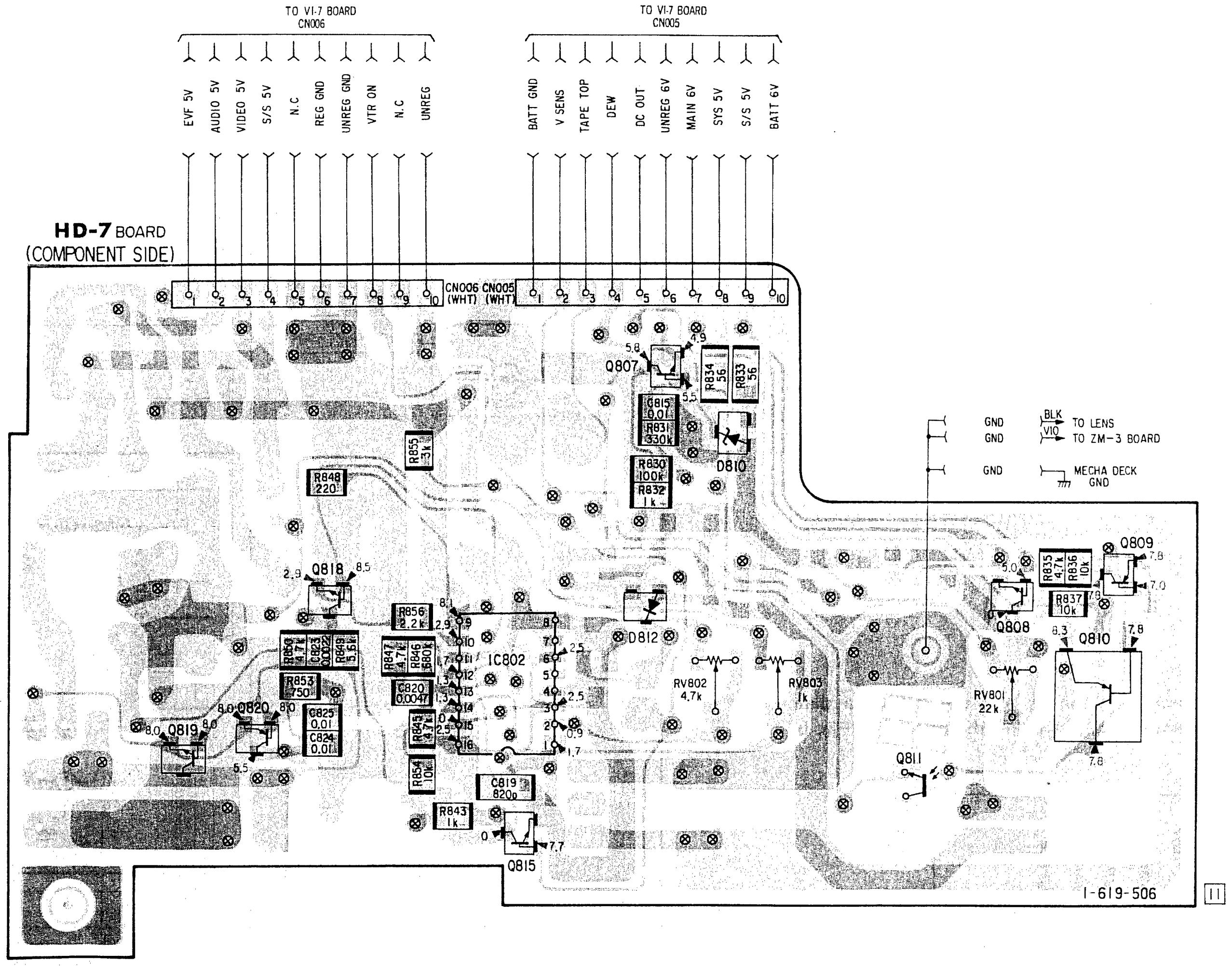
## HD-7 (TAPE SENSOR, STABILIZER POWER SUPPLY) PRINTED WIRING BOARD

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

– Ref. No. HD-7 Board: 9,000 series –

A B C D E F G H I J


HD-7 BOARD (SOLDER SIDE)
TO FU-34 BOARD AND BATTERY
BATT GND
BATT 6V
BLK
RED
CN805 (WHT)
C830
C822
C829
C831
C828
C816
L804
L803
L805
D813
C821
L806
R852 68k
L802
R851 7.5k
R840 4.7k
C817
C818 0.01
Q817
C827
Q821
PS801
CN806
CN805
Q816
L801
C826
1-619-506


TO VI-7 BOARD CN006
EVF 5V
AUDIO 5V
VIDEO 5V
S/S 5V
N.C
REG GND
UNREG GND
VTR ON
N.C
UNREG
TO VI-7 BOARD CN005
BATT GND
V SENS
TAPE TOP
DEW
DC OUT
UNREG 6V
MAIN 6V
SYS 5V
S/S 5V
BATT 6V
HD-7 BOARD (COMPONENT SIDE)
CN006 (WHT)
CN005 (WHT)
GND
GND
GND
BLK
VIO
TO LENS
TO ZM-3 BOARD
MECHA DECK GND
Q807
R834 56
R833 56
C815 0.01
R831 330k
D810
R830 100k
R832 1k
R855 3k
R848 220
Q818
R856 2.2k
IC802
D812
Q809
R835 4.7k
R836 10k
R837 10k
Q808
Q810
RV802 4.7k
RV803 1k
RV801 22k
R853 750
Q819
Q820
C825 0.01
C824 0.01
C820 0.0047
R854 10k
R843 1k
C819 820p
Q815
Q811
1-619-506

When indicating parts by reference number, please include the board name.

Caution:

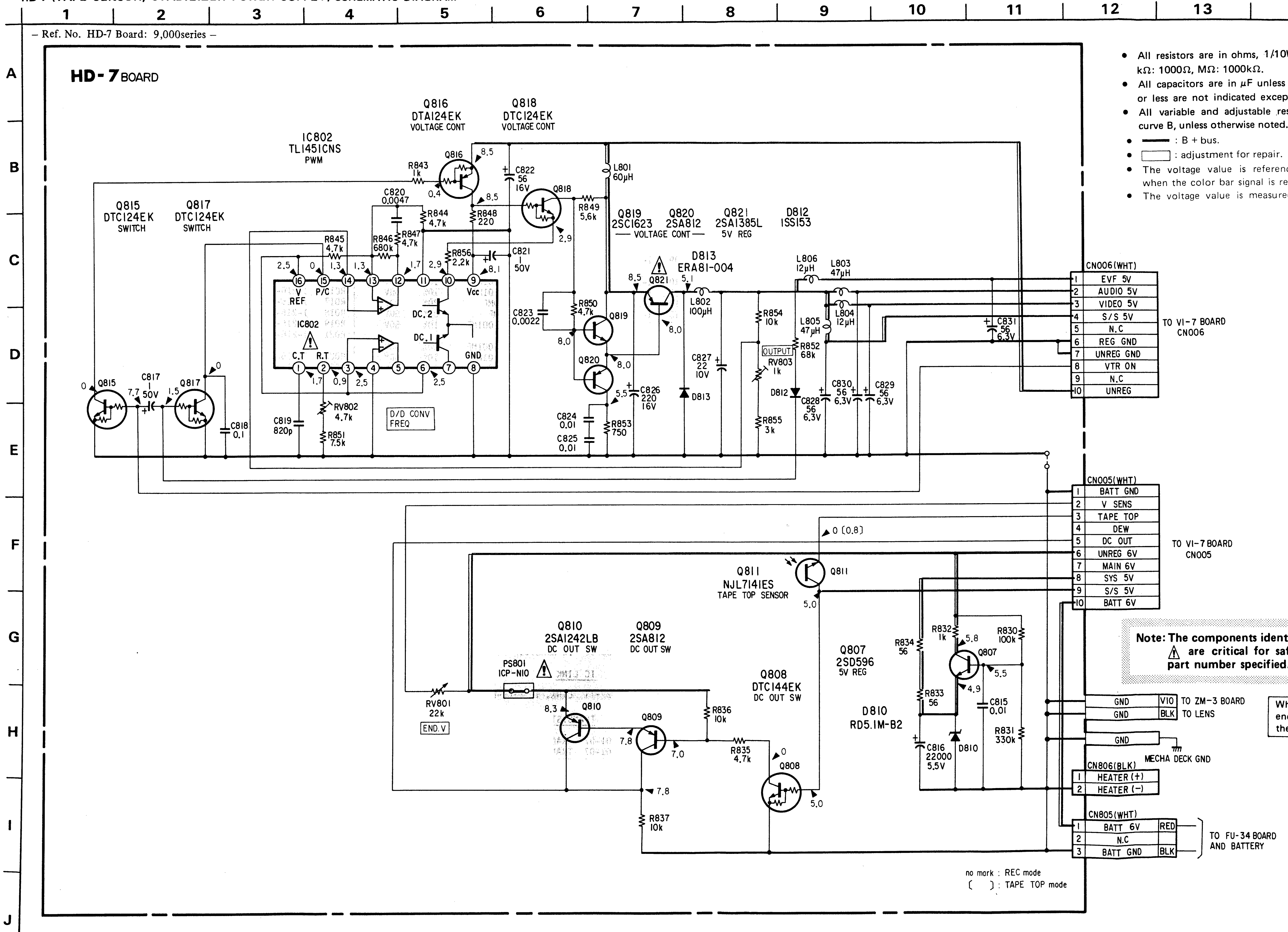
Pattern face side: (Solder Side) Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) Parts on the parts face side seen from the pattern face are indicated.

- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : B+ pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.

## HD-7 (TAPE SENSOR, STABILIZER POWER SUPPLY) SCHEMATIC DIAGRAM

– Ref. No. HD-7 Board: 9,000series –


1
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A
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H
I
J
HD-7 BOARD
Q816 DTA124EK VOLTAGE CONT
Q818 DTC124EK VOLTAGE CONT
IC802 TL1451CNS PWM
Q815 DTC124EK SWITCH
Q817 DTC124EK SWITCH
Q819 2SC1623
Q820 2SA812
— VOLTAGE CONT —
Q821 2SA1385L 5V REG
D812 1SS153
D813 ERA81-004
R843 1k
R844 4.7k
R845 4.7k
R846 680k
R847 4.7k
R848 220
R849 5.6k
R850 4.7k
R851 7.5k
R852 68k
R853 750
R854 10k
R855 3k
R856 2.2k
C817 1 50V
C818 0.1
C819 820p
C820 0.0047
C821 1 50V
C822 56 16V
C823 0.0022
C824 0.01
C825 0.01
C826 220 16V
C827 22 10V
C828 56 6.3V
C829 56 6.3V
C830 56 6.3V
C831 56 6.3V
L801 60μH
L802 100μH
L803 47μH
L804 12μH
L805 47μH
L806 12μH
RV802 4.7k
RV803 1k
OUTPUT
D/D CONV FREQ
V REF
P/C
Vcc
DC.2
DC.1
C.T
R.T
GND
CN006(WHT)
1 EVF 5V
2 AUDIO 5V
3 VIDEO 5V
4 S/S 5V
5 N.C
6 REG GND
7 UNREG GND
8 VTR ON
9 N.C
10 UNREG
TO VI-7 BOARD CN006
CN005(WHT)
1 BATT GND
2 V SENS
3 TAPE TOP
4 DEW
5 DC OUT
6 UNREG 6V
7 MAIN 6V
8 SYS 5V
9 S/S 5V
10 BATT 6V
TO VI-7 BOARD CN005
Q811 NJL7141ES TAPE TOP SENSOR
Q810 2SA1242LB DC OUT SW
Q809 2SA812 DC OUT SW
Q808 DTC144EK DC OUT SW
Q807 2SD596 5V REG
D810 RD5.1M-B2
PS801 ICP-N10
RV801 22k
END.V
R830 100k
R831 330k
R832 1k
R833 56
R834 56
R835 4.7k
R836 10k
R837 10k
C815 0.01
C816 22000 5.5V
0 (0.8)
GND VIO TO ZM-3 BOARD
GND BLK TO LENS
GND
MECHA DECK GND
CN806(BLK)
1 HEATER (+)
2 HEATER (–)
CN805(WHT)
1 BATT 6V RED
2 N.C
3 BATT GND BLK
TO FU-34 BOARD AND BATTERY
no mark : REC mode
( ) : TAPE TOP mode

- All resistors are in ohms, 1/10W unless otherwise noted. kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▬ : B + bus.
- ▭ : adjustment for repair.
- The voltage value is reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10MΩ).

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

When indicating parts by reference number, please include the board name.

# ELECTRICAL PARTS LIST

## HD-7

**NOTE:**

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS

- MF : µF, PF : µµF

COILS

- MMH : mH, UH : µH

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | *A-7060-674-A | HD-7 BOARD, COMPLETE<br>********************* | | | |
| | *X-3686-591-1 | HOLDER, HS TOP | | | |
| | | CAPACITOR | | | |
| C815 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C816 | 1-125-373-11 | DOUBLE LAYERS | 22000MF | | 5.5V |
| C817 | 1-124-255-00 | ELECT | 1MF | 20% | 50V |
| C818 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C819 | 1-163-203-00 | CERAMIC CHIP | 820PF | 5% | 50V |
| C820 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C821 | 1-124-255-00 | ELECT | 1MF | 20% | 50V |
| C822 | 1-124-569-11 | ELECT | 56MF | 20% | 16V |
| C823 | 1-163-013-00 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C824 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C825 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C826 | 1-123-321-00 | ELECT | 220MF | 20% | 16V |
| C827 | 1-127-491-00 | ELECT(SOLID) | 22MF | 20% | 10V |
| C828 | 1-124-565-00 | ELECT | 56MF | 20% | 6.3V |
| C829 | 1-124-565-00 | ELECT | 56MF | 20% | 6.3V |
| C830 | 1-124-565-00 | ELECT | 56MF | 20% | 6.3V |
| C831 | 1-124-565-00 | ELECT | 56MF | 20% | 6.3V |
| | | CONNECTOR | | | |
| CN005 | 1-564-610-21 | CONNECTOR, BOARD TO BOARD | | | |
| CN006 | 1-564-610-21 | CONNECTOR, BOARD TO BOARD | | | |
| CN805 | *1-564-028-00 | PIN, CONNECTOR 3P | | | |
| CN806 | *1-564-027-00 | PIN, CONNECTOR 2P | | | |
| | | DIODE | | | |
| D810 | 8-719-105-82 | DIODE RD5.1M-B2 | | | |
| D812 | 8-719-108-01 | DIODE 1SS153 | | | |
| D813 | 8-719-981-01 | DIODE ERA81-004 | | | |
| | | IC | | | |
| IC802 ⚠ | 8-759-908-95 | IC TL1451CNS | | | |
| | | COIL | | | |
| L801 | 1-421-801-11 | COIL, CHOKE 60UH | | | |
| L802 | 1-421-884-11 | COIL, CHOKE 100UH | | | |
| L803 | 1-408-417-00 | MICRO INDUCTOR 47UH | | | |
| L804 | 1-421-826-11 | COIL, CHOKE 12UH | | | |
| L805 | 1-408-417-00 | MICRO INDUCTOR 47UH | | | |
| L806 | 1-421-826-11 | COIL, CHOKE 12UH | | | |
| | | IC LINK | | | |
| PS801 ⚠ | 1-532-605-11 | LINK, IC (ICP-N10) | | | |
| | | TRANSISTOR | | | |
| Q807 | 8-729-159-64 | TRANSISTOR 2SD596 | | | |
| Q808 | 8-729-901-01 | TRANSISTOR DTC144EK | | | |
| Q809 | 8-729-100-76 | TRANSISTOR 2SA812 | | | |
| Q810 ⚠ | 8-729-202-86 | TRANSISTOR 2SA1242LB | | | |
| Q811 | 8-729-700-08 | NJL7141E | | | |
| Q815 | 8-729-901-00 | TRANSISTOR DTC124EK | | | |
| Q816 | 8-729-901-05 | TRANSISTOR DTA124EK | | | |
| Q817 | 8-729-901-00 | TRANSISTOR DTC124EK | | | |
| Q818 | 8-729-901-00 | TRANSISTOR DTC124EK | | | |
| Q819 | 8-729-100-66 | TRANSISTOR 2SC1623 | | | |
| Q820 | 8-729-100-76 | TRANSISTOR 2SA812 | | | |
| Q821 ⚠ | 8-729-105-29 | TRANSISTOR 2SA1385 | | | |
| | | RESISTOR | | | |
| R830 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R831 | 1-216-109-00 | METAL CHIP | 330K | 5% | 1/10W |
| R832 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R833 | 1-216-168-00 | METAL CHIP | 56 | 5% | 1/8W |
| R834 | 1-216-168-00 | METAL CHIP | 56 | 5% | 1/8W |
| R835 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R836 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R837 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R843 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R844 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R845 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R846 | 1-216-117-00 | METAL CHIP | 680K | 5% | 1/10W |
| R847 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R848 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R849 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R850 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R851 | 1-216-070-00 | METAL CHIP | 7.5K | 5% | 1/10W |
| R852 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W |
| R853 | 1-216-046-00 | METAL CHIP | 750 | 5% | 1/10W |
| R854 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R855 | 1-216-060-00 | METAL CHIP | 3K | 5% | 1/10W |
| R856 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| | | VARIABLE RESISTOR | | | |
| RV801 | 1-230-871-21 | RES, ADJ, METAL GLAZE | 22K | | |
| RV802 | 1-230-869-11 | RES, ADJ, METAL GLAZE | 4.7K | | |
| RV803 | 1-230-867-11 | RES, ADJ, METAL GLAZE | 1K | | |

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## AP-1

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | A-7060-553-A | AP-1 BOARD, COMPLETE<br>******************** | | | |

**The mounted AP-3 and AP-1 Boards will be repair parts in pairs (No replacement of either Board cam be done.)**

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | CAPACITOR | | | |
| C001 | 1-124-236-00 | ELECT | 47MF | 20% | 10V |
| C002 | 1-124-236-00 | ELECT | 47MF | 20% | 10V |
| C003 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C004 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C005 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V |
| C006 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V |
| C007 | 1-123-622-00 | ELECT | 22MF | 20% | 16V |
| C008 | 1-123-617-00 | ELECT | 10MF | 20% | 16V |
| C009 | 1-123-617-00 | ELECT | 10MF | 20% | 16V |
| C010 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C011 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C012 | 1-124-233-00 | ELECT | 10MF | 20% | 10V |
| C013 | 1-124-255-00 | ELECT | 1MF | 20% | 50V |
| C014 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C015 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C016 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C017 | 1-123-611-00 | ELECT | 1MF | 20% | 50V |
| C018 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C019 | 1-123-617-00 | ELECT | 10MF | 20% | 16V |
| C020 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C021 | 1-124-444-00 | ELECT | 220MF | 20% | 10V |
| C022 | 1-124-444-00 | ELECT | 220MF | 20% | 10V |
| C023 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C024 | 1-123-617-00 | ELECT | 10MF | 20% | 16V |
| C025 | 1-124-257-00 | ELECT | 2.2MF | 20% | 50V |
| C028 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| | | DIODE | | | |
| D001 | 8-719-815-55 | DIODE 1S1555 | | | |
| D002 | 8-719-815-55 | DIODE 1S1555 | | | |
| D003 | 8-719-815-55 | DIODE 1S1555 | | | |
| D004 | 8-719-815-55 | DIODE 1S1555 | | | |
| D005 | 8-719-133-07 | DIODE RD3.3EB | | | |
| | | IC | | | |
| IC001 | 9-991-183-01 | IC HY9104 | | | |
| IC002 | 9-991-184-01 | IC RF5L01 | | | |
| IC003 | 8-759-701-01 | IC NJM2904M | | | |
| IC004 | 8-759-700-90 | IC NJM2901M | | | |
| | | IC LINK | | | |
| PS001 ⚠ | 1-532-727-11 | LINK, IC (ICP-N5) | | | |
| | | TRANSISTOR | | | |
| Q001 | 8-729-101-07 | TRANSISTOR 2SB804 | | | |
| Q002 | 8-729-101-07 | TRANSISTOR 2SB804 | | | |
| Q004 | 8-729-103-16 | TRANSISTOR 2SC1622A | | | |
| Q005 | 8-729-101-07 | TRANSISTOR 2SB804 | | | |
| Q006 | 8-729-101-07 | TRANSISTOR 2SB804 | | | |
| Q007 | 8-729-101-07 | TRANSISTOR 2SB804 | | | |
| Q008 | 8-729-199-92 | TRANSISTOR 2SD999 | | | |
| Q010 | 8-729-103-16 | TRANSISTOR 2SC1622A | | | |
| Q011 | 8-729-199-92 | TRANSISTOR 2SD999 | | | |
| | | RESISTOR | | | |
| R001 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W |
| R002 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W |
| R003 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R004 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R005 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R006 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R007 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R008 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R009 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R010 | 1-216-042-00 | METAL CHIP | 510 | 5% | 1/10W |
| R011 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R012 | 1-216-088-00 | METAL CHIP | 43K | 5% | 1/10W |
| R013 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R014 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W |
| R015 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R016 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W |
| R017 | 1-216-070-00 | METAL CHIP | 7.5K | 5% | 1/10W |
| R018 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W |
| R019 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R021 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R022 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R023 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R024 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R025 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R026 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R027 | 1-216-044-00 | METAL CHIP | 620 | 5% | 1/10W |
| R028 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R029 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R030 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R031 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R032 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R033 | 1-216-042-00 | METAL CHIP | 510 | 5% | 1/10W |
| R034 | 1-247-196-00 | CARBON | 15 | 5% | 1/2W |
| R035 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W |
| R036 | 1-246-412-00 | CARBON | 3 | 5% | 1/4W |
| R037 | 1-216-298-00 | METAL CHIP | 2.2 | 5% | 1/10W |
| R038 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R039 | 1-247-710-11 | CARBON | 560 | 5% | 1/4W |
| R040 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W |
| R041 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W |
| R042 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R043 | 1-216-087-00 | METAL CHIP | 39K | 5% | 1/10W |
| R044 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R045 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R046 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| | | VARIABLE RESISTOR | | | |
| RV001 | 1-228-895-00 | RES, ADJ, METAL GLAZE | 100K | | |
| RV002 | 1-228-895-00 | RES, ADJ, METAL GLAZE | 100K | | |
| RV003 | 1-228-890-00 | RES, ADJ, METAL GLAZE | 4.7K | | |
| RV004 | 1-228-891-00 | RES, ADJ, METAL GLAZE | 10K | | |

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When indicating parts by reference number, please include the board name.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
|  | A-7060-553-A | AP-3 BOARD, COMPLETE<br>******************** |  |

**The mounted AP-3 and AP-1 Boards will be repair parts in pairs (No replacement of either Board cam be done.)**

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
|  |  | CAPACITOR |  |
| C029 | 1-124-229-00 | ELECT 33MF 20% 10V |  |
|  |  | IC |  |
| IC005 | 8-759-701-01 | IC NJM2904M |  |
|  |  | TRANSISTOR |  |
| Q009 | 8-729-199-92 | TRANSISTOR 2SD999 |  |
| Q012 | 8-729-103-16 | TRANSISTOR 2SC1622A |  |
| Q013 | 8-729-103-16 | TRANSISTOR 2SC1622A |  |
|  |  | RESISTOR |  |
| R020 | 1-216-061-00 | METAL CHIP 3.3K 5% 1/10W |  |
| R047 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W |  |
| R048 | 1-216-115-00 | METAL CHIP 560K 5% 1/10W |  |
| R049 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W |  |
| R050 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W |  |
| R051 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W |  |
| R052 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W |  |

When indicating parts by reference number, please include the board name.

# 1. CAMERA SECTION ADJUSTMENT

## 1-34-3. AF Adjustment

### 1. +5V Adjustment (AP-1 board)

Equipment: Digital voltmeter: Q001 collector

**[Adjustment Method]**

Adjust to 5.00 ± 0.05V dc with RV4.

### 2. A+B Signal Synchronism Adjustment

Equipment: Oscilloscope

**[Adjustment Method]**

1) Connect 1ch of the oscilloscope to TP2.
   Connect 2ch of the oscilloscope to TP3.

**Note:** Make measurement by attaching a resistor of 100k~1MΩ at the tip of 2cH-probe.

each ch Range

| ch \ Range | Time | Volts | AC or DC |
|---|---|---|---|
| 1ch | 10 μsec | 50 (mV) | AC |
| 2ch |  | 2V | DC |

2) Adjust RV2, and set the rising time of read-signal of A+B to the peak of the bottom of A+B signal.

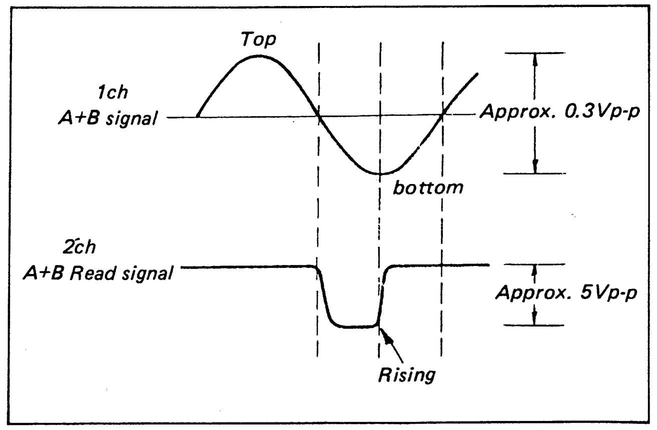

Fig. 1-55

### 3. A+B Signal Synchronims Adjustment

Equipment: Oscilloscope

**[Adjustment Method]**

1) Connect 1ch of the oscilloscope to TP1.

**Note:** Make measurement by attaching a resistor of 100k~1MΩ at the tip of 2cH-probe.

each ch Range

| ch \ Range | Time | Volts | AC or DC |
|---|---|---|---|
| 1ch | 10μsec | 50 (mV) | AC |
| 2ch |  | 2V | DC |

2) Adjust RV1, and set the peak (top or bottom) of A-B signal to the rising time of A-B read signal.

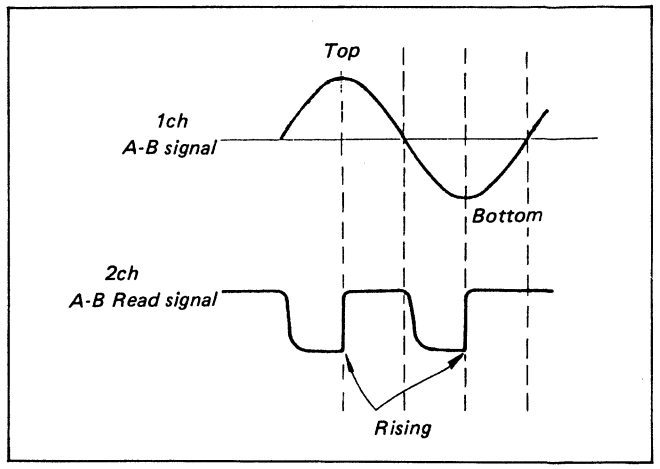

Fig. 1-56

3) After adjustment, close the light-receiving unit and confirm that the focus ring is at its "∞" position.

### 4. F Speed Adjustment

Equipment: stopwatch

**[Adjustment Method]**

1) For preventing the light from getting into the light-receiving unit, cover it with a coin, etc. (Fig.1-57)
2) Turn the focus ring up to the nearest distance, and turn RV3 to adjust the time for the focus ring to return to "∞" position at 2.7 sec. when releasing the hand.

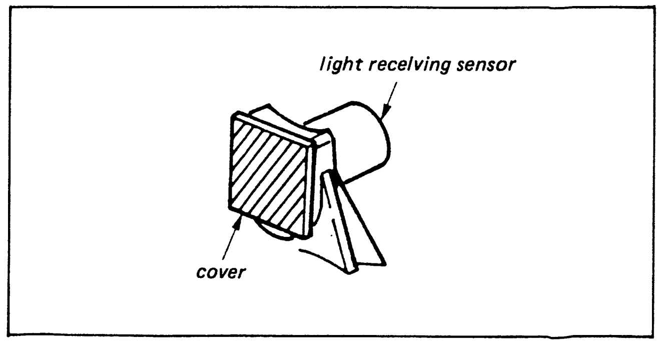

Fig. 1-57

### 3-1. Power System Adjustment (HD-7 board)

#### 3-1-1. DC/DC Converter Frequency Adjustment

Mode: E-E

Frequency counter: Pin ⑩ of IC801.
(Connect the frequency counter through the oscilloscope.)

**[Adjustment Method]**

Adjust to 95.0 ± 0.5kHz with RV802.

#### 3-1-2. DC/DC Converter Output Voltmeter Adjustment (HD-7 board)

Mode: E-E

Digital voltmeter: Pin ③ of CN006 (GND: Pin ⑥ of CN006)

**[Adjustment Method]**

Adjust to 5.07 ± 0.02V with RV803.

# CCD-V8AF-E

**SONY**®

# SERVICE MANUAL

*AEP Model*
*UK Model*
*West Germany Model*

# SUPPLEMENT-2

**Subject: Circuit modifications and partial changes of exploded views.**

File this supplement-2 with the Service Manual.

Owing to partial changes in the circuits of Camera, Video, Servo mechanism control, Mode control and Audio sections, the circuit diagrams, printed circuit diagram and electrical parts list relevant to the above have partially been changed, also exploded views have partially been changed. The major contents of circuit which have been changed are as follows:

- Camera section
  Delete Q718 and Q719 on ME-2 board
- Video section
  The end digits of part No. of EX-3 board has been changed from −11 to −12.
- Servo mechanism control section
  Delete Q623, Q624, and their peripheral resistors and capacitors on MC-8 board.
- Mode control section
  Delete D605 and its peripheral resistors and capacitors on DS-8 board
- Audio section
  Change IC401 on AR-2 board from CX20037-2 to CX20037A and also the peripheral circuits

## TABLE OF CONTENTS

*Section* *Title* *Page*

4. SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

Camera Section, ME-2 board .............. 2
Video Section, EX-3 board ................ 3
Servo/Mechanism Control Section, MC-8 board .............................. 5
Mode Control Section, DS-18 board ...... 10
Audio Section, AR-2 board ................ 11

5. EXPLODED VIEWS .................... 15

6. ELECTRICAL PARTS LIST ............ 16

# SECTION 4
# SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

## ME-2 BOARD CAMERA (1)

**Changing parts List**

| Ref. No. | FORMER | NEW | Page |
|---|---|---|---|
| Q718 | 8-729-900-99 TRANSISTOR DTA144WK | DELETE | 162 |
| Q719 | 8-729-901-03 TRANSISTOR DTC144WK | DELETE | 162 |
| R756 | 1-216-035-00 METAL CHIP 270 5% 1/10W | DELETE | 163 |

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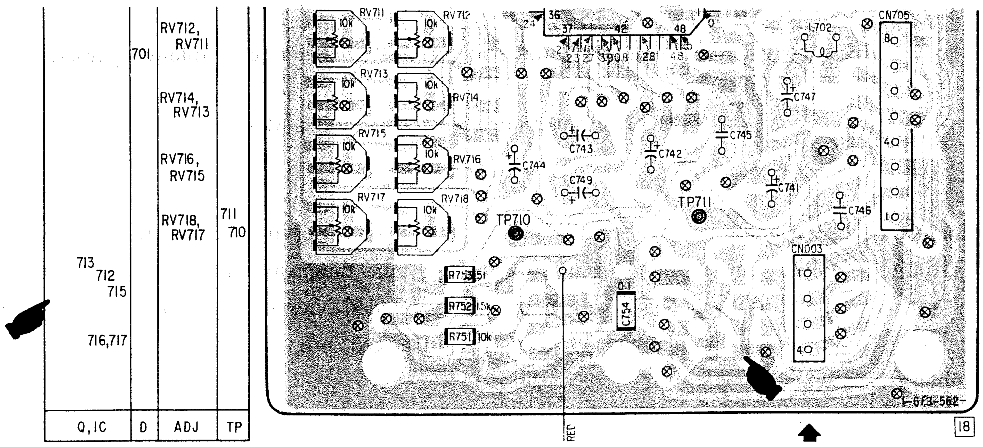
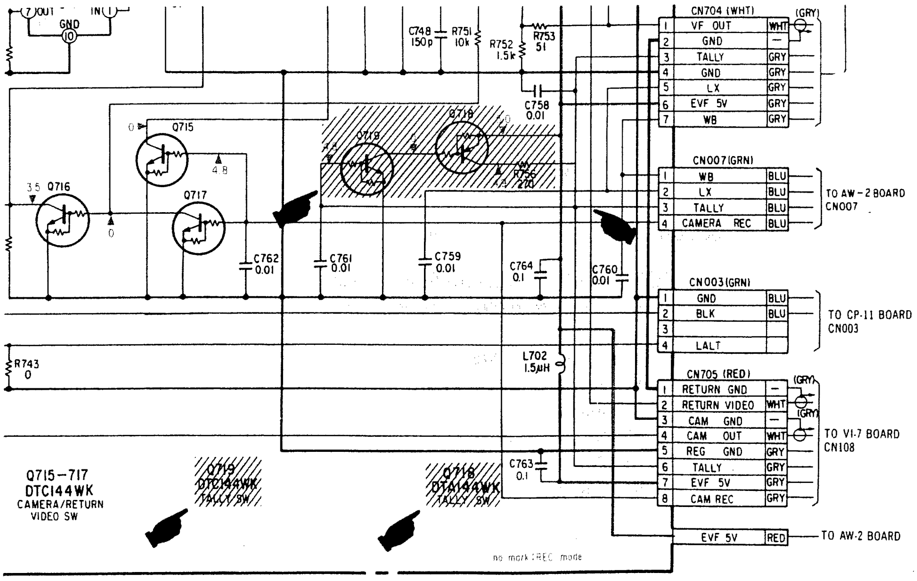
(COMPONENT SIDE)


RV712, RV711
701
RV714, RV713
RV716, RV715
RV718, RV717
711
710
713
712
715
716,717
Q,IC
D
ADJ
TP
RV711
RV712
RV713
RV714
RV715
RV716
RV717
RV718
10k
C743
C744
C749
C742
C745
C747
C741
C746
TP710
TP711
L702
CN705
CN003
R753 51
R752 1.5k
R751 10k
C754
REC
1-673-562-
18

**Page 93**


OUT
IN
GND
Q715
Q716
Q717
Q718
Q719
R756 270
C748 150p
R751 10k
R752 1.5k
R753 51
C758 0.01
C762 0.01
C761 0.01
C759 0.01
C764 0.1
C760 0.01
C763 0.1
L702 1.5μH
R743 0
CN704 (WHT)
VF OUT
GND
TALLY
LX
EVF 5V
WB
CN007 (GRN)
CAMERA REC
TO AW-2 BOARD CN007
CN003 (GRN)
BLK
LALT
TO CP-11 BOARD CN003
CN705 (RED)
RETURN GND
RETURN VIDEO
CAM GND
CAM OUT
REG GND
CAM REC
TO VI-7 BOARD CN108
TO AW-2 BOARD
WHT
GRY
BLU
RED
Q715-717 DTC144WK CAMERA/RETURN VIDEO SW
Q719 DTC144WK TALLY SW
Q718 DTA144WK TALLY SW
no mark : REC mode

▨ : DELETE

☛ : CHANGED PORTION

2

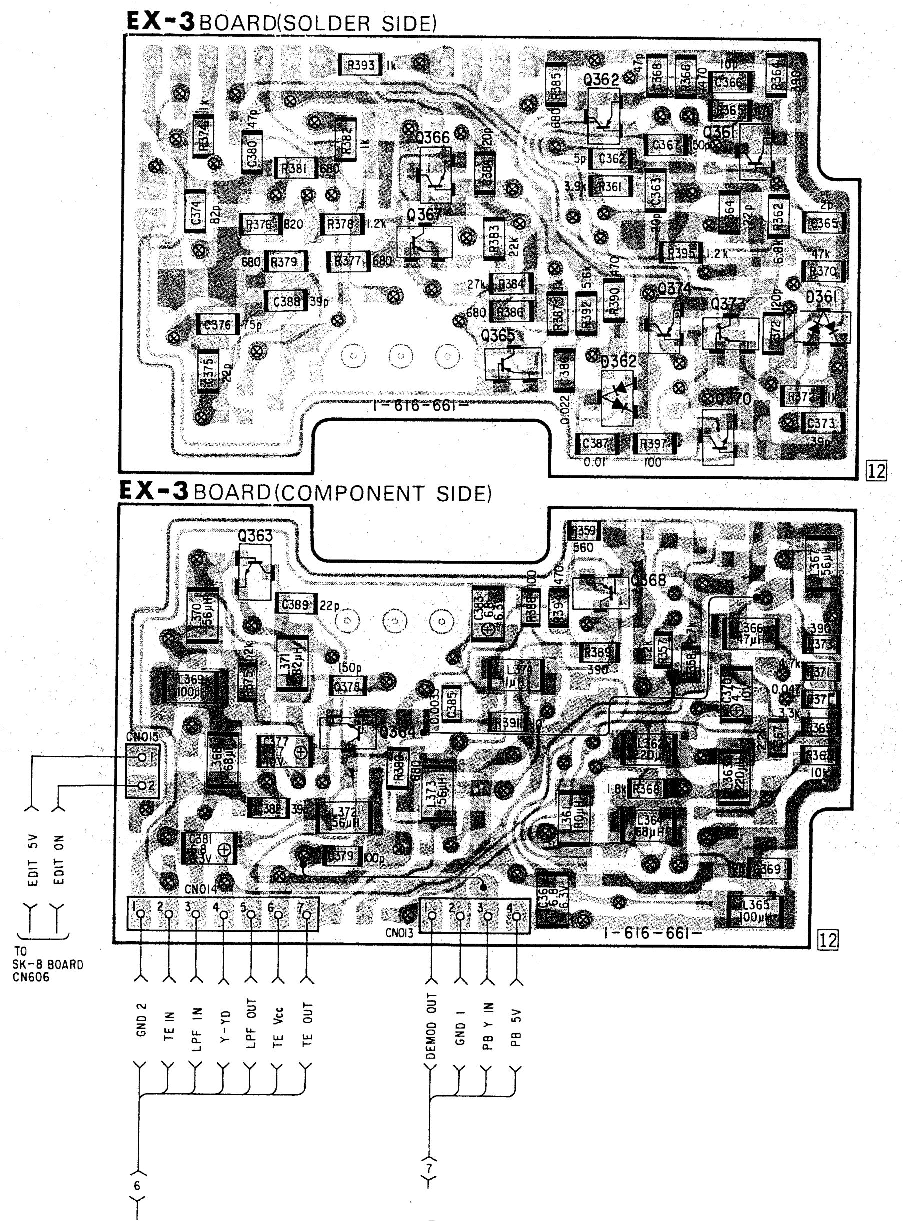
## EX-3 BOARD VIDEO

The end digits of part No. of EX-3 board has been changed from −11 to −12.

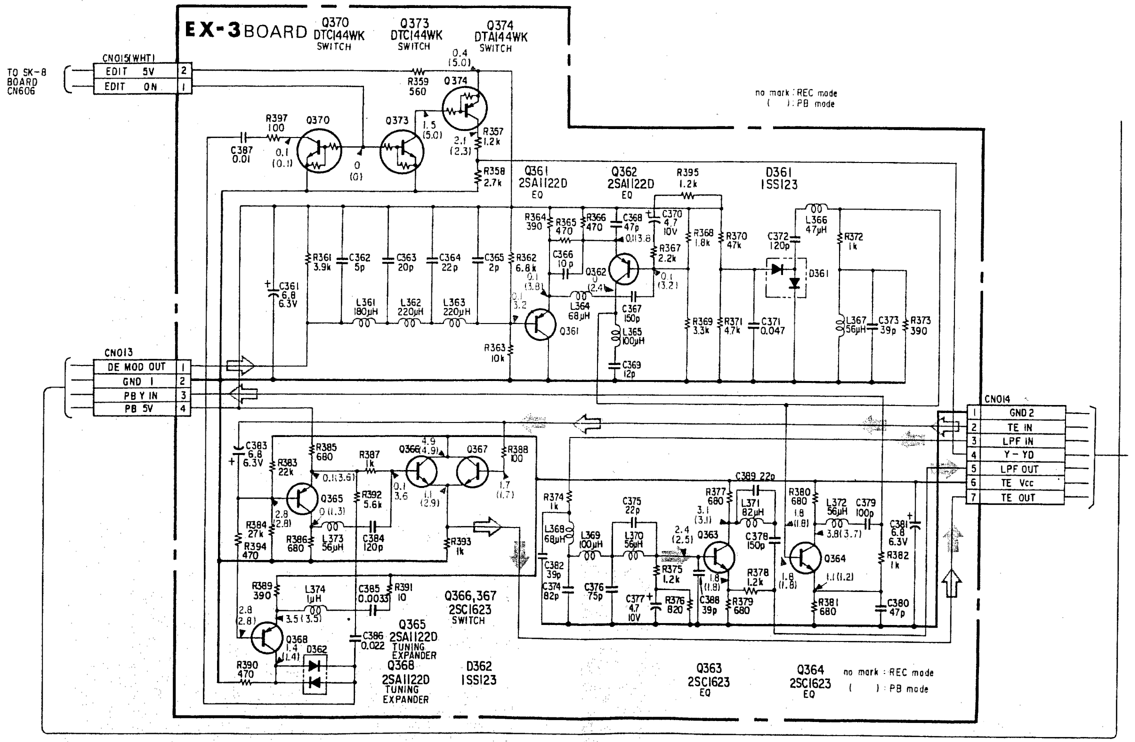
**Changing parts List**

| Ref. No. | FORMER | NEW | Page |
|---|---|---|---|
| C374 | 1-163-112-00 CERAMIC CHIP 62PF 5% 50V | 1-163-115-00 CERAMIC CHIP 2PF 5% 50V | 168 |
| C379 | 1-163-113-00 CERAMIC CHIP 68PF 5% 50V | 1-163-117-00 CERAMIC CHIP 100PF 5% 50V | 168 |
| C382 | 1-163-093-00 CERAMIC CHIP 10PF 5% 50V | 1-163-107-00 CERAMIC CHIP 39PF 5% 50V | 168 |
| C388 | NONE | 1-163-107-00 CERAMIC CHIP 39PF 5% 50V | 168 |
| C389 | NONE | 1-163-101-00 CERAMIC CHIP 22PF 5% 50V | 168 |
| R376 | 1-216-065-00 METAL CHIP 4.7K 5% 1/10W | 1-216-047-00 METAL CHIP 820 5% 1/10W | 169 |
| R382 | 1-216-047-00 METAL CHIP 820 5% 1/10W | 1-216-049-00 METAL CHIP 1K 5% 1/10W | 169 |

**Page 107**


EX-3 BOARD(SOLDER SIDE)
1-616-661-
12
EX-3 BOARD(COMPONENT SIDE)
1-616-661-
12
CN015
CN014
CN013
EDIT 5V
EDIT ON
TO SK-8 BOARD CN606
GND 2
TE IN
LPF IN
Y-YD
LPF OUT
TE Vcc
TE OUT
DEMOD OUT
GND 1
PB Y IN
PB 5V
6
7

**Page 109**


EX-3 BOARD
Q370 DTC144WK SWITCH
Q373 DTC144WK SWITCH
Q374 DTA144WK SWITCH
TO SK-8 BOARD CN606
CN015(WHT)
EDIT 5V
EDIT ON
Q361 2SA1122D EQ
Q362 2SA1122D EQ
D361 1SS123
no mark : REC mode
( ) : PB mode
CN013
DE MOD OUT
GND 1
PB Y IN
PB 5V
CN014
GND 2
TE IN
LPF IN
Y-YD
LPF OUT
TE Vcc
TE OUT
Q366,367 2SC1623 SWITCH
Q365 2SA1122D TUNING EXPANDER
Q368 2SA1122D TUNING EXPANDER
D362 1SS123
Q363 2SC1623 EQ
Q364 2SC1623 EQ

- **Signal path**

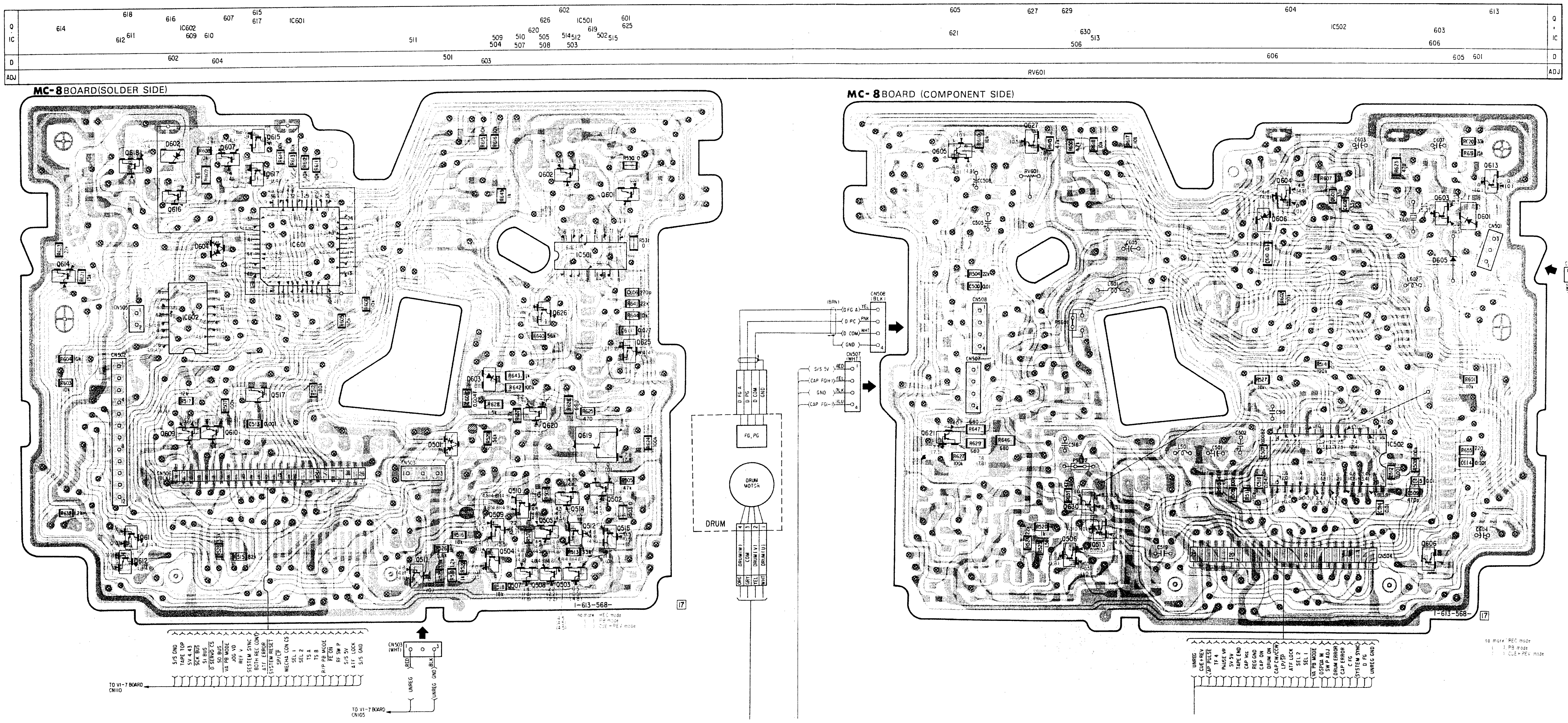
➡ : REC Y Signal

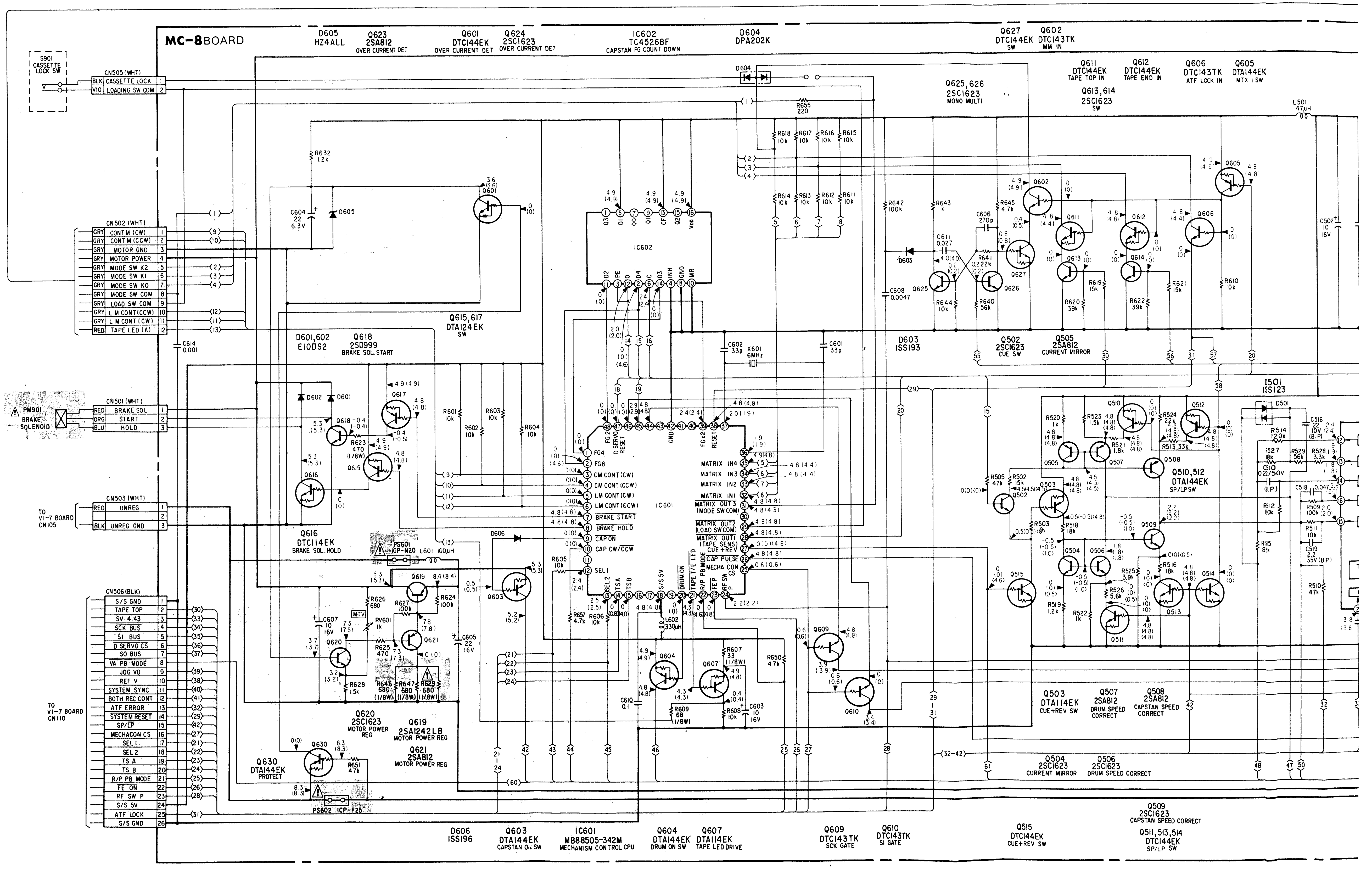
⇨ : PB Y Signal

## MC-8 BOARD SERVO/MECHANISM CONTROL

**Page 116**

- As Q623, Q624, and their peripheral circuits (resistors and capacitors) have been deleted or altered, see the circuit diagram and printed diagram below.
- The deletion of Q623, Q624, C609, R630, R631, R635 through R639, and R652 through R654, which are the excess current prevention circuits of the control motor and loading motor, and alteration from DTC143TK to DTC144EK of Q601 are beyond -17 of end digits of the board.

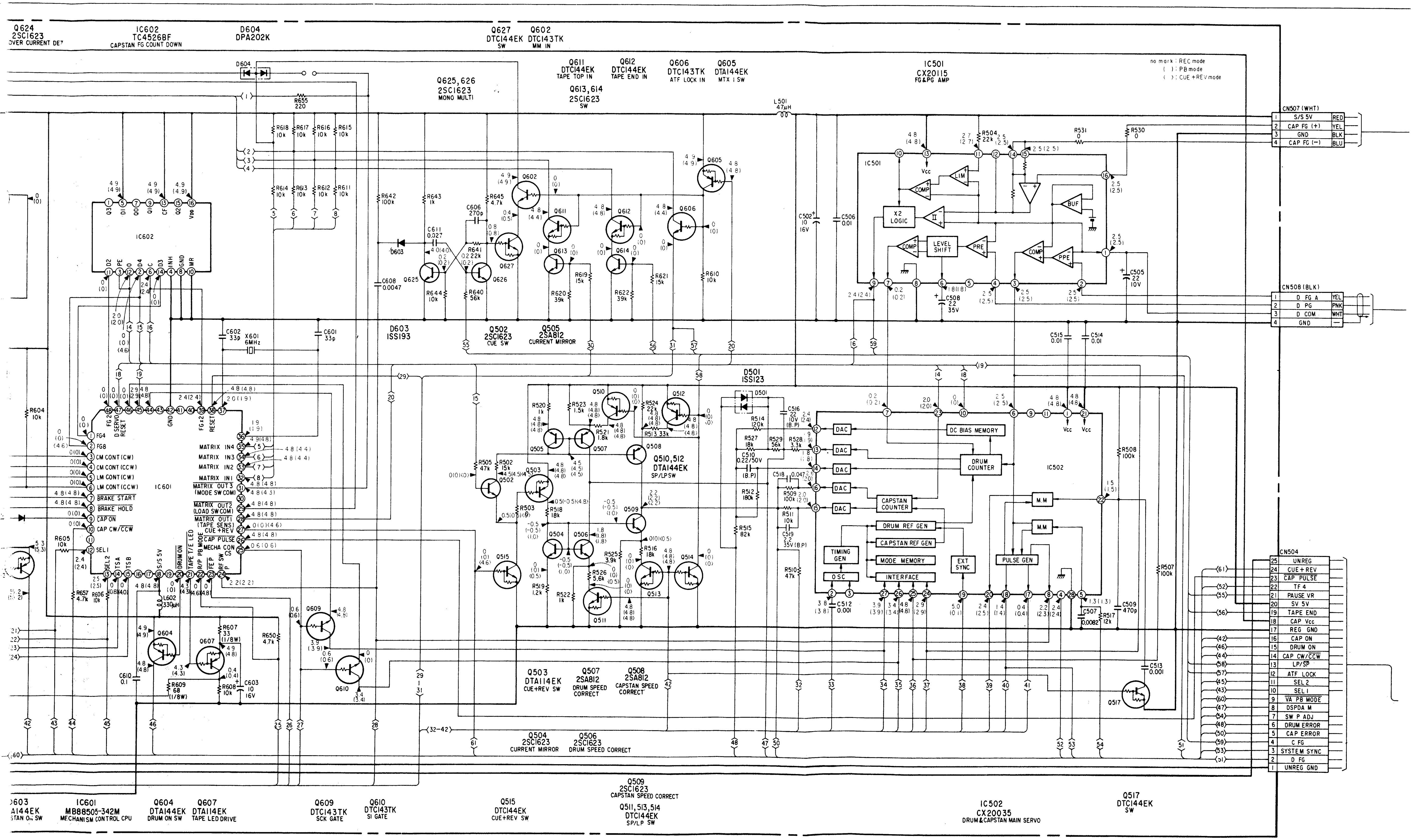

Q
IC
D
ADJ
MC-8 BOARD (SOLDER SIDE)
MC-8 BOARD (COMPONENT SIDE)
IC601
IC602
IC501
IC502
CN506 (BLK)
CN507 (WHT)
CN503 (WHT)
CN501 (WHT)
FG,PG
DRUM MOTOR
DRUM
PM901 BRAKE SOLENOID
RV601
1-613-568-
17
TO VI-7 BOARD CN110
TO VI-7 BOARD CN105


MC-8BOARD
D605 HZ4ALL
Q623 2SA812 OVER CURRENT DET
Q601 DTC144EK OVER CURRENT DET
Q624 2SC1623 OVER CURRENT DET
IC602 TC4526BF CAPSTAN FG COUNT DOWN
D604 DPA202K
Q627 DTC144EK SW
Q602 DTC143TK MM IN
Q611 DTC144EK TAPE TOP IN
Q612 DTC144EK TAPE END IN
Q606 DTC143TK ATF LOCK IN
Q605 DTA144EK MTX 1 SW
Q625,626 2SC1623 MONO MULTI
Q613,614 2SC1623 SW
S901 CASSETTE LOCK SW
CN505 (WHT)
CASSETTE LOCK
LOADING SW COM
CN502 (WHT)
CONT M (CW)
CONT M (CCW)
MOTOR GND
MOTOR POWER
MODE SW K2
MODE SW K1
MODE SW K0
MODE SW COM
LOAD SW COM
L M CONT (CCW)
L M CONT (CW)
TAPE LED (A)
D601,602 E10DS2
Q618 2SD999 BRAKE SOL.START
Q615,617 DTA124EK SW
D603 1SS193
Q502 2SC1623 CUE SW
Q505 2SA812 CURRENT MIRROR
D501 1SS123
PM901 BRAKE SOLENOID
CN501 (WHT)
BRAKE SOL
START
HOLD
Q616 DTC114EK BRAKE SOL. HOLD
CN503 (WHT)
UNREG
UNREG GND
TO VI-7 BOARD CN105
PS601 ICP-N20
L601 100μH
IC601
Q510,512 DTA144EK SP/LP SW
CN506 (BLK)
S/S GND
TAPE TOP
SV 4.43
SCK BUS
SI BUS
D SERVO CS
SO BUS
VA PB MODE
JOG VD
REF V
SYSTEM SYNC
BOTH REC CONT
ATF ERROR
SYSTEM RESET
SP/LP
MECHACON CS
SEL 1
SEL 2
TS A
TS B
R/P PB MODE
FE ON
RF SW P
S/S 5V
ATF LOCK
S/S GND
TO VI-7 BOARD CN110
Q620 2SC1623 MOTOR POWER REG
Q619 2SA1242LB MOTOR POWER REG
Q621 2SA812 MOTOR POWER REG
Q630 DTA144EK PROTECT
PS602 ICP-F25
Q503 DTA114EK CUE+REV SW
Q507 2SA812 DRUM SPEED CORRECT
Q508 2SA812 CAPSTAN SPEED CORRECT
Q504 2SC1623 CURRENT MIRROR
Q506 2SC1623 DRUM SPEED CORRECT
Q509 2SC1623 CAPSTAN SPEED CORRECT
D606 1SS196
Q603 DTA144EK CAPSTAN ON SW
IC601 MB88505-342M MECHANISM CONTROL CPU
Q604 DTA144EK DRUM ON SW
Q607 DTA114EK TAPE LED DRIVE
Q609 DTC143TK SCK GATE
Q610 DTC143TK SI GATE
Q515 DTC144EK CUE+REV SW
Q511,513,514 DTC144EK SP/LP SW

## MC-8BOARD

| REF \ MODE | | LP | | SP | |
|---|---|---|---|---|---|
| | | REC | CUE+REV | REC | CUE+REV |
| Q502 | B | 0 | 0.6 | 0 | 0.6 |
| | C | 4.4 | 0 | 4.4 | 0 |
| | E | 4.8 | 0 | 4.8 | 0 |
| Q503 | B | 4.8 | — | 4.8 | — |
| | C | -0.3 | — | -0.3 | — |
| | E | 4.8 | — | 4.8 | — |
| Q504 | B | -0.3 | — | -0.3 | — |
| | C | -0.3 | — | -0.3 | — |
| | E | 0 | — | 0 | — |
| Q505 | B | 4.4 | 4.0 | 4.4 | 4.0 |
| | C | 4.4 | 4.6 | 4.4 | 4.6 |
| | E | 4.8 | 4.0 | 4.8 | 4.0 |
| Q506 | B | -0.3 | — | -0.3 | — |
| | C | 1.9 | — | 1.9 | — |
| | E | 0 | — | 0 | — |
| Q507 | B | 4.4 | — | 4.4 | — |
| | C | 1.9 | — | 1.9 | — |
| | E | 4.8 | — | 4.8 | — |
| Q508 | B | 4.4 | — | 4.4 | — |
| | C | 2.4 | — | 2.1 | — |
| | E | 4.8 | — | 4.8 | — |
| Q509 | B | -0.3 | — | -0.3 | — |
| | C | 2.4 | — | 2.1 | — |
| | E | 0 | — | 0 | — |
| Q510 | B | 4.8 | — | 0 | — |
| | C | 4.8 | — | 4.8 | — |
| | E | 4.8 | — | 4.8 | — |
| Q511 | B | 0 | — | 4.8 | — |
| | C | 0 | — | 0 | — |
| | E | GND | — | GND | — |
| Q512 | B | 4.8 | — | 0 | — |
| | C | 4.8 | — | 4.8 | — |
| | E | 4.8 | — | 4.8 | — |
| Q513 | B | 0 | — | 4.8 | — |
| | C | 0 | — | 0 | — |
| | E | GND | — | GND | — |
| Q514 | B | 0 | — | 4.8 | — |
| | C | 4.8 | — | 0 | — |
| | E | GND | — | GND | — |
| Q515 | B | 0 | 4.5 | 0 | 4.5 |
| | C | 4.8 | 0 | 4.8 | 0 |
| | E | GND | GND | GND | GND |
| Q517 | B | 0 | — | 4.8 | — |
| | C | 0.7 | — | 0 | — |
| | E | GND | — | GND | — |

2

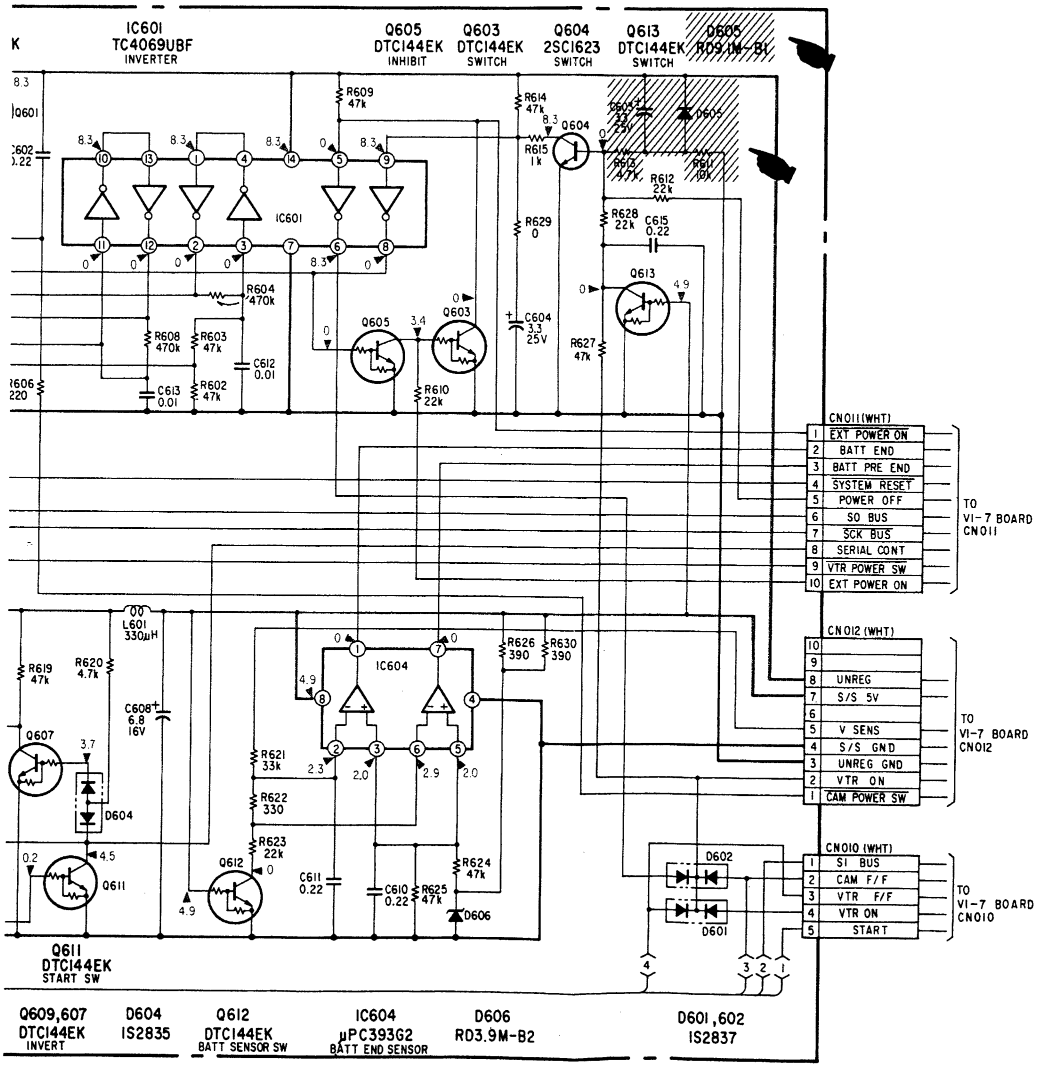

Q624 2SC1623 OVER CURRENT DET
IC602 TC4526BF CAPSTAN FG COUNT DOWN
D604 DPA202K
Q627 DTC144EK SW
Q602 DTC143TK MM IN
Q611 DTC144EK TAPE TOP IN
Q612 DTC144EK TAPE END IN
Q606 DTC143TK ATF LOCK IN
Q605 DTA144EK MTX 1 SW
Q613, 614 2SC1623 SW
Q625, 626 2SC1623 MONO MULTI
IC501 CX20115 FG&PG AMP
no mark : REC mode
( ) : PB mode
( ) : CUE+REV mode
CN507 (WHT)
1 S/S 5V RED
2 CAP FG (+) YEL
3 GND BLK
4 CAP FG (−) BLU
CN508 (BLK)
1 D FG A YEL
2 D PG PNK
3 D COM WHT
4 GND
D603 1SS193
Q502 2SC1623 CUE SW
Q505 2SA812 CURRENT MIRROR
D501 1SS123
Q510, 512 DTA144EK SP/LPSW
IC601
IC502
DC BIAS MEMORY
DRUM COUNTER
CAPSTAN COUNTER
DRUM REF GEN
CAPSTAN REF GEN
MODE MEMORY
INTERFACE
TIMING GEN
OSC
EXT SYNC
PULSE GEN
M.M
DAC
X2 LOGIC
LEVEL SHIFT
COMP
LIM
PRE
PPE
BUF
CN504
25 UNREG
24 CUE+REV
23 CAP PULSE
22 TF 4
21 PAUSE VR
20 SV 5V
19 TAPE END
18 CAP Vcc
17 REG GND
16 CAP ON
15 DRUM ON
14 CAP CW/CCW
13 LP/SP
12 ATF LOCK
11 SEL 2
10 SEL 1
9 VA PB MODE
8 DSPDA M
7 SW P ADJ
6 DRUM ERROR
5 CAP ERROR
4 C FG
3 SYSTEM SYNC
2 D FG
1 UNREG GND
FG4
FG8
CM CONT (CW)
CM CONT (CCW)
LM CONT (CW)
LM CONT (CCW)
BRAKE START
BRAKE HOLD
CAP ON
CAP CW/CCW
SEL 1
MATRIX IN4
MATRIX IN3
MATRIX IN2
MATRIX IN1
MATRIX OUT3 (MODE SW COM)
MATRIX OUT2 (LOAD SW COM)
MATRIX OUT1 (TAPE SENS)
CUE+REV
CAP PULSE
MECHA CON CS
X601 6MHz
L501 47µH
L602 330µH
Q503 DTA114EK CUE+REV SW
Q507 2SA812 DRUM SPEED CORRECT
Q508 2SA812 CAPSTAN SPEED CORRECT
Q504 2SC1623 CURRENT MIRROR
Q506 2SC1623 DRUM SPEED CORRECT
Q509 2SC1623 CAPSTAN SPEED CORRECT
Q511, 513, 514 DTC144EK SP/LP SW
Q603 A144EK STAN ON SW
IC601 MB88505-342M MECHANISM CONTROL CPU
Q604 DTA114EK DRUM ON SW
Q607 DTA114EK TAPE LED DRIVE
Q609 DTC143TK SCK GATE
Q610 DTC143TK S1 GATE
Q515 DTC144EK CUE+REV SW
IC502 CX20035 DRUM&CAPSTAN MAIN SERVO
Q517 DTC144EK SW

## DS-8 BOARD MODE CONTROL

**Changing parts List**

| Ref. No. | FORMER | NEW | Page |
|---|---|---|---|
| C603 | 1-124-258-00 ELECT 3.3MF 20% 25V | DELETE | 176 |
| D605 | 8-719-106-43 DIODE RD9.1M-B1 | DELETE | 177 |
| R611 | 1-216-073-00 METAL CHIP 10K 5% 1/10W | DELETE | 177 |
| R613 | 1-216-065-00 METAL CHIP 4.7K 5% 1/10W | DELETE | 177 |

**Page 131**



IC601
TC4069UBF
INVERTER
Q605
DTC144EK
INHIBIT
Q603
DTC144EK
SWITCH
Q604
2SC1623
SWITCH
Q613
DTC144EK
SWITCH
D605
RD9.1M-B1
R609 47k
R614 47k
R615 1k
C603 3.3 25V
R613 4.7k
R611 10k
R612 22k
R628 22k
C615 0.22
R629 0
R604 470k
R608 470k
R603 47k
C612 0.01
C613 0.01
R602 47k
C604 3.3 25V
R627 47k
R610 22k
R606 220
C602 0.22
Q601
CN011 (WHT)
1 EXT POWER ON
2 BATT END
3 BATT PRE END
4 SYSTEM RESET
5 POWER OFF
6 SO BUS
7 SCK BUS
8 SERIAL CONT
9 VTR POWER SW
10 EXT POWER ON
TO VI-7 BOARD CN011
CN012 (WHT)
8 UNREG
7 S/S 5V
5 V SENS
4 S/S GND
3 UNREG GND
2 VTR ON
1 CAM POWER SW
TO VI-7 BOARD CN012
CN010 (WHT)
1 SI BUS
2 CAM F/F
3 VTR F/F
4 VTR ON
5 START
TO VI-7 BOARD CN010
L601 330μH
R619 47k
R620 4.7k
C608 6.8 16V
Q607
D604
Q611
IC604
R626 390
R630 390
R621 33k
R622 330
R623 22k
Q612
C611 0.22
C610 0.22
R625 47k
R624 47k
D606
D602
D601
Q611
DTC144EK
START SW
Q609,607
DTC144EK
INVERT
D604
IS2835
Q612
DTC144EK
BATT SENSOR SW
IC604
μPC393G2
BATT END SENSOR
D606
RD3.9M-B2
D601,602
IS2837

▨ : DELETE

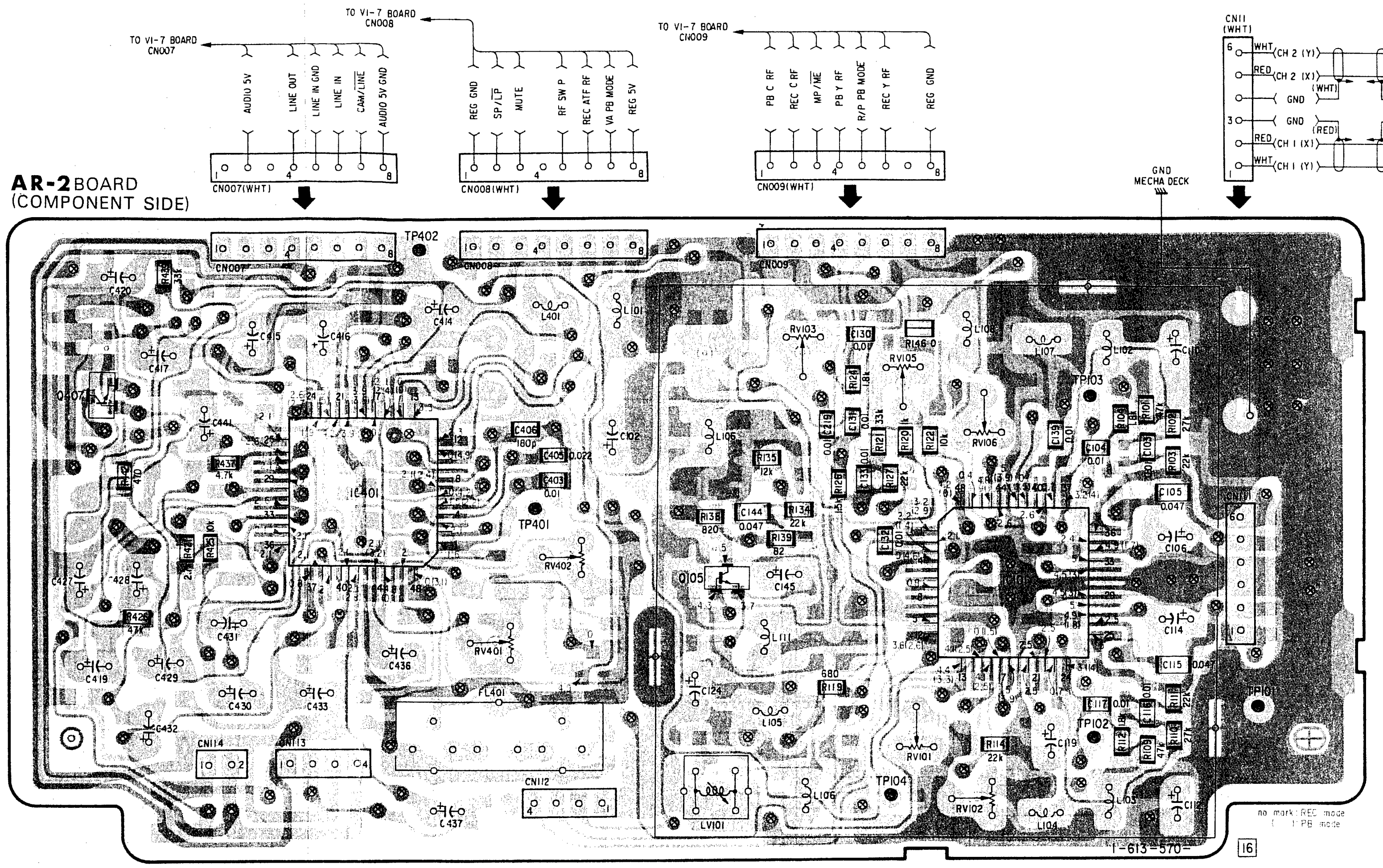
☛ : CHANGED PORTION

## AR-2 BOARD AUDIO

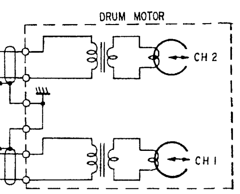
**Page 133**

In accordance with the change IC401 (AFM PROCESS IC) from CX20037-2 to CX20037A, the peripheral circuits have also been changed. Regarding the board which uses CX20037A, refer to the following circuit diagram and printed circuit diagram.

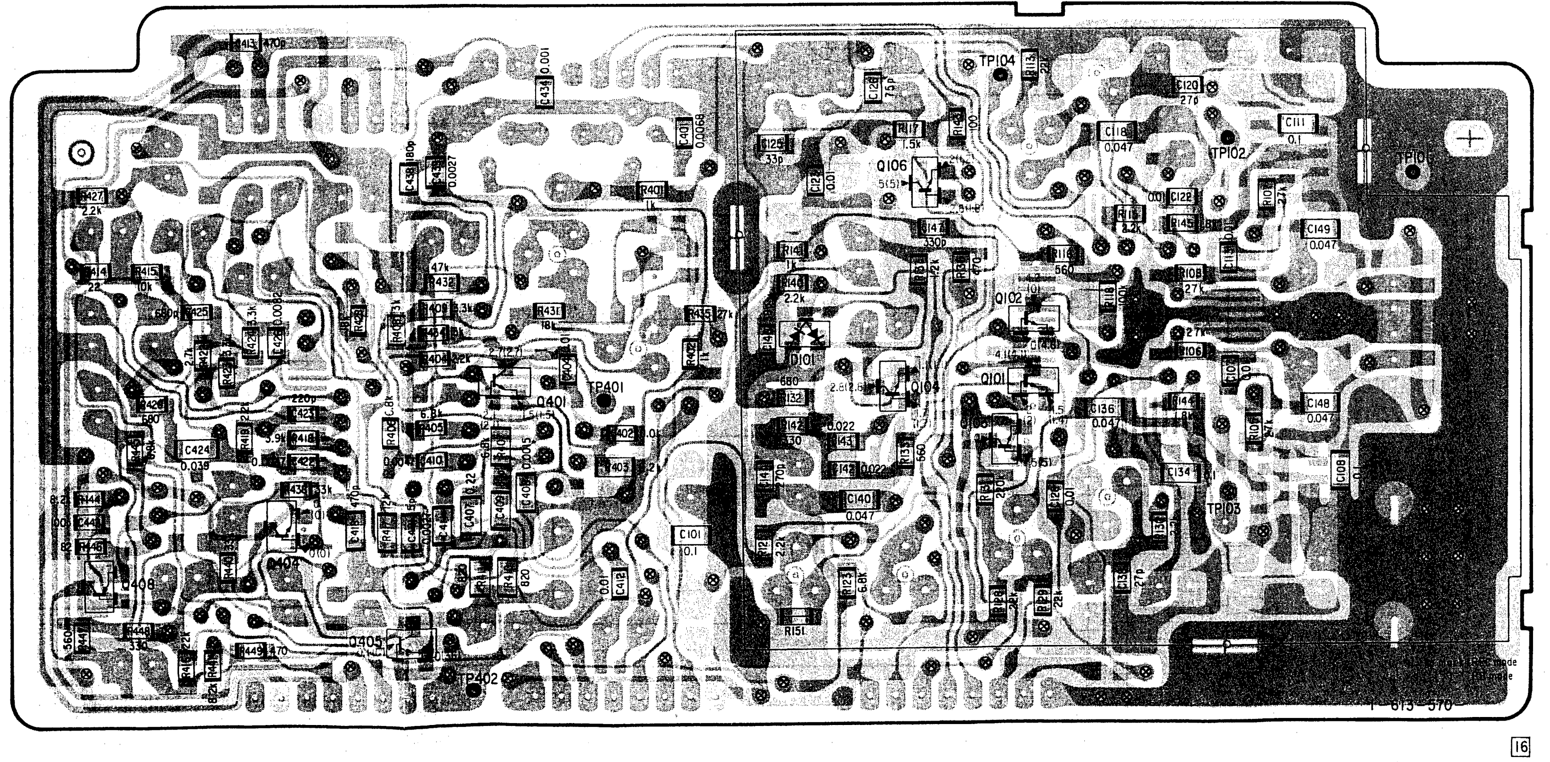
**AR-2** BOARD
(COMPONENT SIDE)


TO VI-7 BOARD CN007
AUDIO 5V
LINE OUT
LINE IN GND
LINE IN
CAM/LINE
AUDIO 5V GND
CN007(WHT)
TO VI-7 BOARD CN008
REG GND
SP/LP
MUTE
RF SW P
REC ATF RF
VA PB MODE
REG 5V
CN008(WHT)
TO VI-7 BOARD CN009
PB C RF
REC C RF
MP/ME
PB Y RF
R/P PB MODE
REC Y RF
REG GND
CN009(WHT)
GND
MECHA DECK
CN11 (WHT)
TP402
IC401
TP401
RV401
RV402
TP103
TP101
TP102
TP104
RV101
RV102
RV103
RV105
RV106
LV101
no mark : REC mode
( ) : PB mode
1-613-570-

16


DRUM MOTOR
CH 2
CH 1

**AR-2** BOARD (SOLDER SIDE)

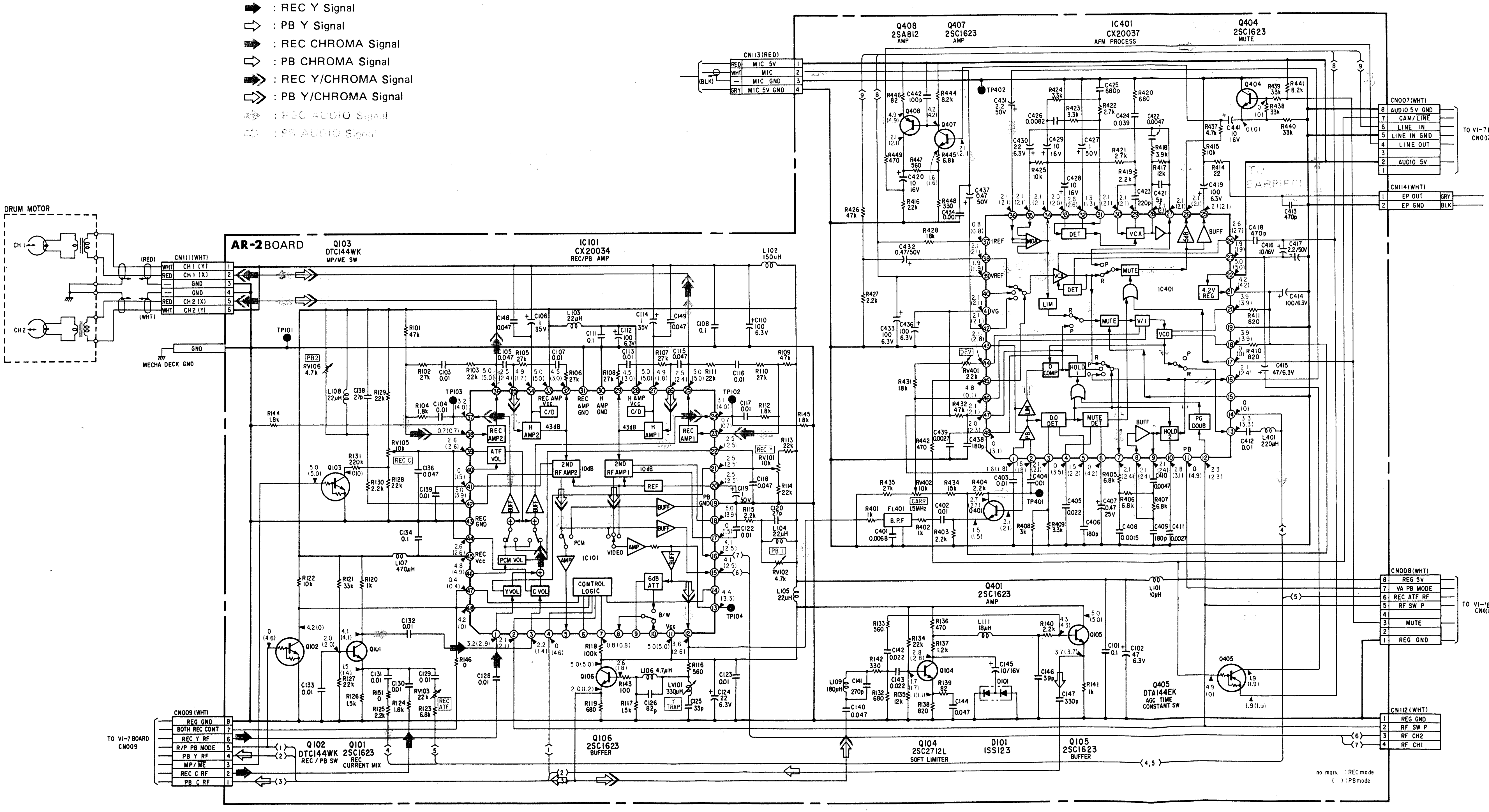

TP104
TP102
TP101
TP103
TP401
TP402
Q106
Q102
Q101
D101
Q401
1-613-570-

16

| Q · IC | D | ADJ | TP |
|---|---|---|---|
| | | | 402 |
| | | RV103 | |
| | | RV105 | 103 |
| 407 | | RV106 | |
| IC401 | | | |
| | | | 401 |
| 105, IC101 | | RV402 | |
| | | | 101 |
| | | | 102 |
| | | RV101 | |
| | | | 104 |
| | | LV101, RV102 | |
| | | | 104 |
| | | | 102<br>101 |
| 106 | | | |
| 102 | 101 | | |
| 401<br>104, 101 | | | 401 |
| 103 | | | |
| 404 | | | |
| 408<br>405 | | | |
| | | | 402 |
| Q · IC | D | ADJ | TP |

2

- **Signal path**
  - ➡ : REC Y Signal
  - ⇨ : PB Y Signal
  - ➡ : REC CHROMA Signal
  - ⇨ : PB CHROMA Signal
  - ➡ : REC Y/CHROMA Signal
  - ⇨ : PB Y/CHROMA Signal
  - ➡ : REC AUDIO Signal
  - ⇨ : PB AUDIO Signal


DRUM MOTOR
CH1
CH2
CN111(WHT)
CH1 (Y)
CH1 (X)
GND
CH2 (X)
CH2 (Y)
MECHA DECK GND
AR-2 BOARD
Q103 DTC144WK MP/ME SW
IC101 CX20034 REC/PB AMP
L102 150uH
TP101
TP102
TP103
TP104
REC AMP2
REC AMP1
ATF VOL
H AMP2
H AMP1
2ND RF AMP2
2ND RF AMP1
REF
BUFF
PCM VOL
CONTROL LOGIC
Y VOL
C VOL
6dB ATT
PCM
VIDEO
B/W
Q102 DTC144WK REC/PB SW
Q101 2SC1623 REC CURRENT MIX
Q106 2SC1623 BUFFER
CN009(WHT)
REG GND
BOTH REC CONT
REC Y RF
R/P PB MODE
PB Y RF
MP/ME
REC C RF
PB C RF
TO VI-78 BOARD CN009
CN113(RED)
MIC 5V
MIC
MIC GND
MIC 5V GND
Q408 2SA812 AMP
Q407 2SC1623 AMP
IC401 CX20037 AFM PROCESS
Q404 2SC1623 MUTE
TP402
TP401
DET
VCA
LIM
MUTE
V/I
VCO
4.2V REG
COMP
HOLD
PG DOUB
DO DET
MUTE DET
B.P.F
FL401 15MHz
CARR
CN007(WHT)
AUDIO 5V GND
CAM/LINE
LINE IN
LINE IN GND
LINE OUT
AUDIO 5V
TO VI-78 BOARD CN007
CN114(WHT)
EP OUT
EP GND
CN008(WHT)
REG 5V
VA PB MODE
REC ATF RF
RF SW P
MUTE
REG GND
TO VI-78 BOARD CN008
Q401 2SC1623 AMP
Q104 2SC2712L SOFT LIMITER
D101 1SS123
Q105 2SC1623 BUFFER
Q405 DTA144EK AGC TIME CONSTANT SW
CN112(WHT)
REG GND
RF SW P
RF CH2
RF CH1
no mark : REC mode
( ) : PB mode

# SECTION 5
# EXPLODED VIEWS

This is change in repair part and new repair part.

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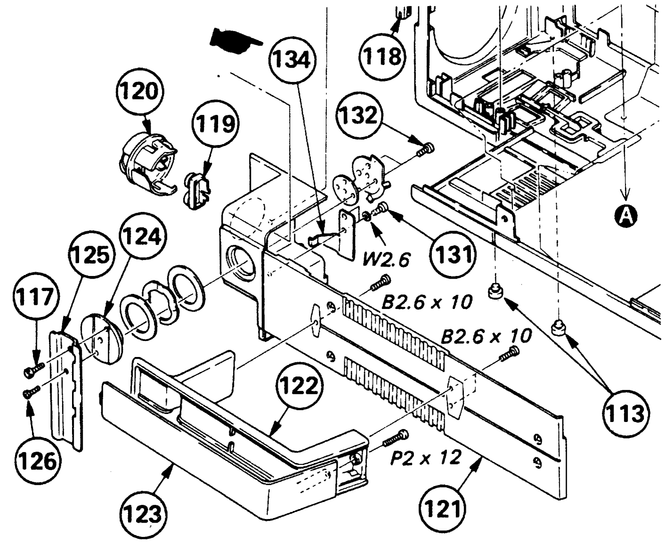
## 5-3. CONTROL PANEL, CABINET (UPPER, RIGHT) ASSEMBLY



: New repair part

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 134 | *3-693-293-01 | PLATE(A), LOCK | |

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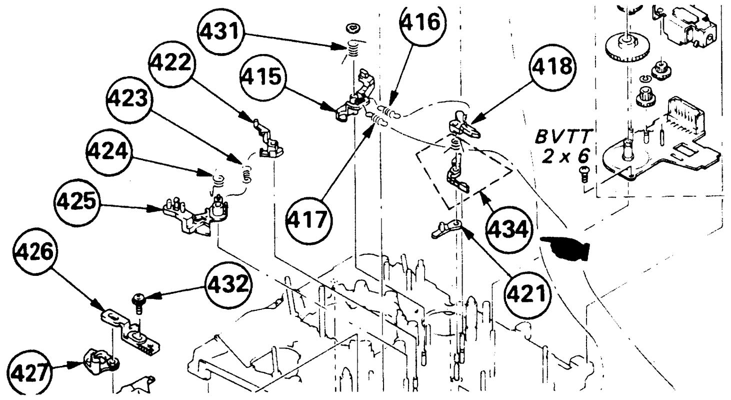
## 5-9. CHASSIS ASSEMBLY 4



: Changed portion

The two parts of SPRING ⑲ and ARM, RVS ⑳ have become ARM ASSY, RVS.
SPRING and ARM, RVS cannot be supplied as single units.

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 434 | A-7040-016-D | ARM ASSY, RVS | |

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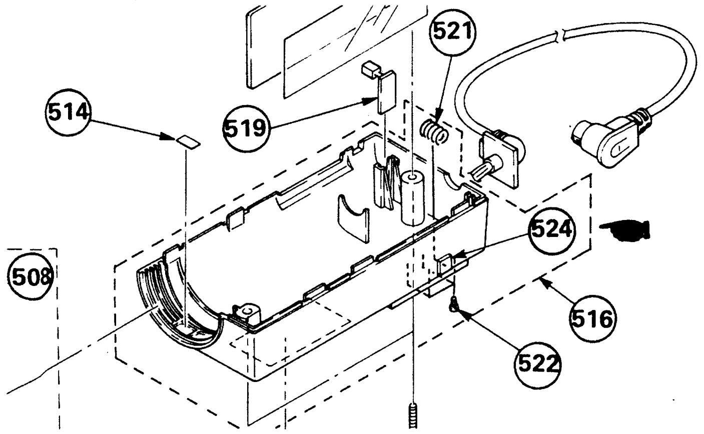
## 5-11.EVF (VF-206) (AEP, W.G MODEL) ASSEMBLY
## EVF (VF-208) (UK MODEL) ASSEMBLY



: New repair part

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 524 | A-7090-144-A | BUTTON KIT, LOCK | |

# SECTION 6
# ELECTRICAL PARTS LIST

Regarding the ME-2, EX-3 and DS-8 boards, refer to the list which contains the changing parts togethar with changing circuit diagrams and printed circuit diagrams.
Regarding AR-2 and MC-8 boards all have been described.

*A-7060-245-A AR-2 BOARD, COMPLETE
*********************

*3-686-957-01 CASE (MAIN), SHIELD, AR

CAPACITOR

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C101 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C102 | 1-124-224-00 | ELECT | 47MF | 20% | 6.3V |
| C103 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C104 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C105 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C106 | 1-131-347-00 | TANTALUM | 1MF | 10% | 35V |
| C107 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C108 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | 10% | 50V |
| C110 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C111 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C112 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C113 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C114 | 1-131-347-00 | TANTALUM | 1MF | 10% | 35V |
| C115 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C116 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C117 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C118 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C119 | 1-124-255-00 | ELECT | 1MF | 20% | 50V |
| C120 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C122 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C123 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C124 | 1-124-222-00 | ELECT | 22MF | 20% | 6.3V |
| C125 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C126 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V |
| C128 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C129 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C130 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C131 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C132 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C133 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C134 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | 10% | 50V |
| C136 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C138 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C139 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C140 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C141 | 1-163-127-00 | CERAMIC CHIP | 270PF | 5% | 50V |
| C142 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C143 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C144 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C145 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C146 | 1-163-107-00 | CERAMIC CHIP | 39PF | 5% | 50V |
| C147 | 1-163-129-00 | CERAMIC CHIP | 330PF | 5% | 50V |
| C148 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C149 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C401 | 1-163-019-00 | CERAMIC CHIP | 0.0068MF | 10% | 50V |
| C402 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C403 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C404 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C405 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C406 | 1-163-257-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C407 | 1-163-083-00 | TANTAL | 0.47MF | 20% | 25V |
| C408 | 1-163-145-00 | CERAMIC CHIP | 0.0015MF | 5% | 50V |
| C409 | 1-163-257-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C410 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C411 | 1-163-014-00 | CERAMIC CHIP | 0.0027MF | 10% | 50V |
| C412 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C413 | 1-163-005-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C414 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C415 | 1-124-225 00 | ELECT | 100MF | 20% | 6.3V |
| C416 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C417 | 1-124-257-00 | ELECT | 2.2MF | 20% | 50V |
| C418 | 1-163-005-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C419 | 1-124-225-00 | ELECT | 100MF | 20% | 6.3V |
| C420 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C421 | 1-163-088-00 | CERAMIC CHIP | 5PF | 0.25PF | 50V |
| C422 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C423 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C424 | 1-163-079-00 | CERAMIC CHIP | 0.039MF | 10% | 25V |
| C425 | 1-163-137-00 | CERAMIC CHIP | 680PF | 5% | 50V |
| C426 | 1-163-020-00 | CERAMIC CHIP | 0.0082MF | 10% | 50V |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C427 | 1-124-255-00 | ELECT 1MF 20% 50V | |
| C428 | 1-124-233-00 | ELECT 10MF 20% 16V | |
| C429 | 1-124-233-00 | ELECT 10MF 20% 16V | |
| C430 | 1-123-618-00 | ELECT 22MF 20% 6.3V | |
| C431 | 1-123-612-00 | ELECT 2.2MF 20% 50V | |
| C432 | 1-124-253-00 | ELECT 0.47MF 20% 50V | |
| C433 | 1-123-661-00 | ELECT 100MF 20% 6.3V | |
| C434 | 1-163-141-00 | CERAMIC CHIP 0.001MF 10% 50V | |
| C436 | 1-123-661-00 | ELECT 100MF 20% 6.3V | |
| C437 | 1-123-610-00 | ELECT 0.47MF 20% 50V | |
| C438 | 1-163-257-00 | CERAMIC CHIP 180PF 5% 50V | |
| C439 | 1-163-014-00 | CERAMIC CHIP 0.0027MF 10% 50V | |
| C441 | 1-124-233-00 | ELECT 10MF 20% 16V | |
| C442 | 1-163-117-00 | CERAMIC CHIP 100PF 5% 50V | |
| | | CONNECTOR | |
| CN007 | 1-564-098-21 | CONNECTOR, BOARD TO BOARD | |
| CN008 | 1-564-098-21 | CONNECTOR, BOARD TO BOARD | |
| CN009 | 1-564-098-21 | CONNECTOR, BOARD TO BOARD | |
| CN111 | *1-564-016-00 | PIN, CONNECTOR 6P | |
| CN112 | *1-564-003-00 | PIN, CONNECTOR 4P | |
| CN113 | *1-564-014-00 | PIN, CONNECTOR 4P | |
| CN114 | *1-564-012-00 | PIN, CONNECTOR 2P | |
| | | DIODE | |
| D101 | 8-719-101-23 | DIODE 1SS123 | |
| | | FILTER | |
| FL401 | 1-235-398-11 | BPF 1.5MHZ | |
| | | IC | |
| IC101 | 8-752-003-40 | IC CX20034 | |
| IC401 | 8-752-003-73 | IC CX20037-2 | |
| | | COIL | |
| L101 | 1-408-970-21 | MICRO INDUCTOR 10UH | |
| L102 | 1-408-984-21 | MICRO INDUCTOR 150UH | |
| L103 | 1-407-161-XX | MICRO INDUCTOR 22UH | |
| L104 | 1-407-161-XX | MICRO INDUCTOR 22UH | |
| L105 | 1-407-161-XX | MICRO INDUCTOR 22UH | |
| L106 | 1-408-966-21 | MICRO INDUCTOR 4.7UH | |
| L107 | 1-407-177-XX | MICRO INDUCTOR 470UH | |
| L108 | 1-407-161-XX | MICRO INDUCTOR 22UH | |
| L109 | 1-407-172-XX | MICRO INDUCTOR 180UH | |
| L111 | 1-407-160-XX | MICRO INDUCTOR 18UH | |
| L401 | 1-408-948-00 | MICRO INDUCTOR 220UH | |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | VARIABLE COIL | |
| LV101 | 1-459-548-11 | COIL, VARIABLE 330UH | |
| | | TRANSISTOR | |
| Q101 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q102 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q103 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q104 | 8-729-271-23 | TRANSISTOR 2SC2712 | |
| Q105 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q106 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q401 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q404 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q405 | 8-729-900-99 | TRANSISTOR DTA144WK | |
| Q407 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q408 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| | | RESISTOR | |
| R101 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R102 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R103 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R104 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R105 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R106 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R107 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R108 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R109 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R110 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R111 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R112 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R113 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R114 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R115 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R116 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |
| R117 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |
| R118 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R119 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R120 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R121 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R122 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R123 | 1-216-069-00 | METAL CHIP 6.8K 5% 1/10W | |
| R124 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R125 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R126 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |
| R127 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R128 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R129 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R130 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R131 | 1-216-105-00 | METAL CHIP 220K 5% 1/10W | |
| R132 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R133 | 1-216-043-00 | METAL CHIP 560 5% 1/10W | |
| R134 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R135 | 1-216-075-00 | METAL CHIP 12K 5% 1/10W | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R136 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R137 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R138 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R139 | 1-216-023-00 | METAL CHIP | 82 | 5% | 1/10W | |
| R140 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R141 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R142 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R143 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R144 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R145 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R146 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R151 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R401 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R402 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R403 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R404 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R405 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R406 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R407 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R408 | 1-216-060-00 | METAL CHIP | 3K | 5% | 1/10W | |
| R409 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R410 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R411 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R414 | 1-216-009-00 | METAL CHIP | 22 | 5% | 1/10W | |
| R415 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R416 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R417 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R418 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R419 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R420 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R421 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R422 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R423 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R424 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R425 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R426 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R427 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R428 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R431 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R432 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R434 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R435 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R437 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R438 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R439 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R440 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R441 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R442 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R444 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R445 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R446 | 1-216-023-00 | METAL CHIP | 82 | 5% | 1/10W | |

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R447 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R448 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R449 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description |
|---|---|---|
| RV101 | 1-230-523-11 | RES, ADJ, METAL GLAZE 10K |
| RV102 | 1-230-522-11 | RES, ADJ, METAL GLAZE 4.7K |
| RV103 | 1-230-524-11 | RES, ADJ, METAL GLAZE 22K |
| RV105 | 1-230-523-11 | RES, ADJ, METAL GLAZE 10K |
| RV106 | 1-230-522-11 | RES, ADJ, METAL GLAZE 4.7K |
| RV401 | 1-230-524-11 | RES, ADJ, METAL GLAZE 22K |
| RV402 | 1-230-523-11 | RES, ADJ, METAL GLAZE 10K |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | *A-7060-243-A | MC-8 BOARD, COMPLETE<br>******************** | | | |
| | 2-279-715-21 | RIVET, NYLON | | | |

### CAPACITOR

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C502 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C505 | 1-124-234-00 | ELECT | 22MF | 20% | 10V |
| C506 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C507 | 1-163-020-00 | CERAMIC CHIP | 0.0082MF | 10% | 50V |
| C508 | 1-124-257-00 | ELECT | 2.2MF | 20% | 35V |
| C509 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V |
| C510 | 1-124-268-00 | ELECT | 0.22MF | 20% | 50V |
| C512 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C513 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C514 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C515 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C516 | 1-124-287-00 | ELECT | 10MF | 20% | 10V |
| C518 | 1-163-075-00 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C519 | 1-124-275-00 | ELECT | 2.2MF | 20% | 35V |
| C601 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C602 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C603 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C604 | 1-124-222-00 | ELECT | 22MF | 20% | 6.3V |
| C605 | 1-124-234-00 | ELECT | 22MF | 20% | 16V |
| C606 | 1-163-127-00 | CERAMIC CHIP | 270PF | 5% | 50V |
| C607 | 1-124-233-00 | ELECT | 10MF | 20% | 16V |
| C608 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C610 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C611 | 1-163-064-00 | CERAMIC CHIP | 0.027MF | 10% | 50V |
| C614 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |

### CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN501 | *1-564-013-00 | PIN, CONNECTOR 3P | |
| CN502 | *1-564-022-00 | PIN, CONNECTOR 12P | |
| CN503 | *1-564-028-00 | PIN, CONNECTOR 3P | |
| CN505 | *1-564-012-00 | PIN, CONNECTOR 2P | |
| CN506 | *1-562-583-11 | CONNECTOR (FPC & FC) | |
| CN507 | *1-564-014-00 | PIN, CONNECTOR 4P | |
| CN508 | *1-564-014-00 | PIN, CONNECTOR 4P | |

### DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D501 | 8-719-101-23 | DIODE 1SS123 | |
| D601 | 8-719-200-27 | DIODE E10DS2 | |
| D602 | 8-719-200-27 | DIODE E10DS2 | |
| D603 | 8-719-100-05 | DIODE 1S2837 | |
| D604 | 8-719-100-03 | DIODE 1S2835 | |
| D605 | 8-719-914-11 | DIODE HZ4ALL | |
| D606 | 8-719-100-05 | DIODE 1S2837 | |

### IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC501 | 8-759-102-29 | IC CX20115 | |
| IC502 | 8-752-003-50 | IC CX20035 | |
| IC601 | 8-759-922-27 | IC MB88505-342M | |
| IC602 | 8-759-201-80 | IC TC4526BF | |

### COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L501 | 1-407-165-XX | MICRO INDUCTOR 47UH | |
| L601 | 1-410-125-11 | COIL, CHOKE 100UH | |
| L602 | 1-408-987-21 | MICRO INDUCTOR 330UH | |

### IC LINK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| PS601⚠ | 1-532-685-11 | LINK, IC (ICP-N20) | |
| PS602⚠ | 1-532-637-21 | LINK, IC (ICP-F25) | |

### TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q502 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q503 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q504 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q505 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q506 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q507 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q508 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q509 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q510 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q511 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q512 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q513 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q514 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q515 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q517 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q601 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q602 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q603 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q604 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q605 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q606 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q607 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q609 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q610 | 8-729-900-98 | TRANSISTOR DTC143TK | |
| Q611 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q612 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q613 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q614 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q615 | 8-729-901-05 | TRANSISTOR DTA124EK | |
| Q616 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q617 | 8-729-901-05 | TRANSISTOR DTA124EK | |
| Q618 | 8-729-199-92 | TRANSISTOR 2SD999 | |
| Q619 | 8-729-202-86 | TRANSISTOR 2SA1242LB | |
| Q620 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q621 | 8-729-100-76 | TRANSISTOR 2SA812 | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q625 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q627 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q630 | 8-729-901-06 | TRANSISTOR DTA144EK | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R502 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R503 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R504 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R505 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R507 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R508 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R509 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R510 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R511 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R512 | 1-216-103-00 | METAL CHIP 180K 5% 1/10W | |
| R513 | 1-216-085-00 | METAL CHIP 33K 5% 1/10W | |
| R514 | 1-216-099-00 | METAL CHIP 120K 5% 1/10W | |
| R515 | 1-216-095-00 | METAL CHIP 82K 5% 1/10W | |
| R516 | 1-216-079-00 | METAL CHIP 18K 5% 1/10W | |
| R517 | 1-216-075-00 | METAL CHIP 12K 5% 1/10W | |
| R518 | 1-216-079-00 | METAL CHIP 18K 5% 1/10W | |
| R519 | 1-216-051-00 | METAL CHIP 1.2K 5% 1/10W | |
| R520 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R521 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R522 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R523 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |
| R524 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R525 | 1-216-063-00 | METAL CHIP 3.9K 5% 1/10W | |
| R526 | 1-216-067-00 | METAL CHIP 5.6K 5% 1/10W | |
| R527 | 1-216-079-00 | METAL CHIP 18K 5% 1/10W | |
| R528 | 1-216-061-00 | METAL CHIP 3.3K 5% 1/10W | |
| R529 | 1-216-091-00 | METAL CHIP 56K 5% 1/10W | |
| R530 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R531 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R588 | 1-216-083-00 | METAL CHIP 27K 5% 1/10W | |
| R601 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R602 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R603 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R604 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R605 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R606 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R607 | 1-216-162-00 | METAL CHIP 33 5% 1/8W | |
| R608 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R609 | 1-216-170-00 | METAL CHIP 68 5% 1/8W | |
| R610 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R611 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R612 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R613 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R614 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R615 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R616 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R617 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R618 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R619 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R620 | 1-216-087-00 | METAL CHIP 39K 5% 1/10W | |
| R621 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R622 | 1-216-087-00 | METAL CHIP 39K 5% 1/10W | |
| R623 | 1-216-190-00 | METAL CHIP 470 5% 1/8W | |
| R624 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R625 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R626 | 1-216-045-00 | METAL CHIP 680 5% 1/10W | |
| R627 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R628 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |
| R629 | ⚠ 1-216-194-91 | METAL CHIP 680 5% 1/8W | |
| R632 | 1-216-051-00 | METAL CHIP 1.2K 5% 1/10W | |
| R640 | 1-216-091-00 | METAL CHIP 56K 5% 1/10W | |
| R641 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R642 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R643 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R644 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R645 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R646 | ⚠ 1-216-194-91 | METAL CHIP 680 5% 1/8W | |
| R647 | ⚠ 1-216-194-91 | METAL CHIP 680 5% 1/8W | |
| R650 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R651 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R655 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R657 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV601 | 1-230-520-11 | RES, ADJ, METAL GLAZE 1K | |

CRYSTAL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| X601 | 1-567-346-11 | OSCILLATOR, CERAMIC 6MHZ | |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.